VOLUME LIV NUMBER SIX

THE NATIONAL GEOGRAPHIC MAGAZINE

DECEMBER, 1928

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PUBLISHED BY THE
NATIONAL GEOGRAPHIC SOCIETY
HUBBARD MEMORIAL HALL
WASHINGTON, D.C.

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TO carry out the purposes for which it was founded forty years ago the National Geographic Society publishes this Magazine. All receipts are invested in the Magazine itself or expended directly to promote geographic knowledge.

ARTICLES and photographs are desired. For material which the Magazine can use, generous remuneration is made. Contributions should be accompanied by an addressed return envelope and postage.

IMMEDIATELY after the terrific eruption of the world's largest crater, Mt. Katmai, in Alaska, a National Geographic Society expedition was sent to make observations of this remarkable phenomenon. Four expeditions have followed and the extraordinary scientific data resulting given to the world. In this vicinity an eighth wonder of the world was discovered and explored—"The Valley of Ten Thousand Smokes," a vast area of steaming, spouting fissures. As a result of The Society's discoveries this area has been created a National Monument by proclamation of the President of the United States.

AT an expense of over $50,000 The Society sent a notable series of expeditions into Peru to investigate the traces of the Inca race. Their discoveries form a large share of our knowledge of a civilization waning when Pizarro first set foot in Peru.

THE Society also had the honor of subscribing a substantial sum to the expedition of Admiral Peary, who discovered the North Pole.

NOT long ago The Society granted $25,000, and in addition $75,000 was given by individual members to the Government when the congressional appropriation for the purpose was insufficient, and the finest of the giant sequoia trees of California were thereby saved for the American people.

THE Society is conducting extensive explorations and excavations in northwestern New Mexico, which was one of the most densely populated areas in North America before Columbus came, a region where prehistoric peoples lived in vast communal dwellings and whose customs, ceremonies, and name have been engulfed in an oblivion.

TO further the important study of solar radiation in relation to long-range weather forecastings, The Society has appropriated $60,000 to enable the Smithsonian Institution to establish a station for four years on Mt. Brukkaros, in Southwest Africa.

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A New Kind of Motor Car Value

. . . . value which is measured not only by the dollar but by the finest of fine car standards, as well

Whenever a man or woman thinks of any General Motors car, it is perfectly obvious that he or she thinks of it as the finest car in its field. Back of this attitude toward all General Motors cars, is the fact that they bring you a *new kind* of motor car value—value money alone cannot measure.

Such value can result only when practically limitless resources are at the command of engineering and artistic genius of the highest order—as is the case with Fisher.

Cadillac . LaSalle . Buick . Oakland

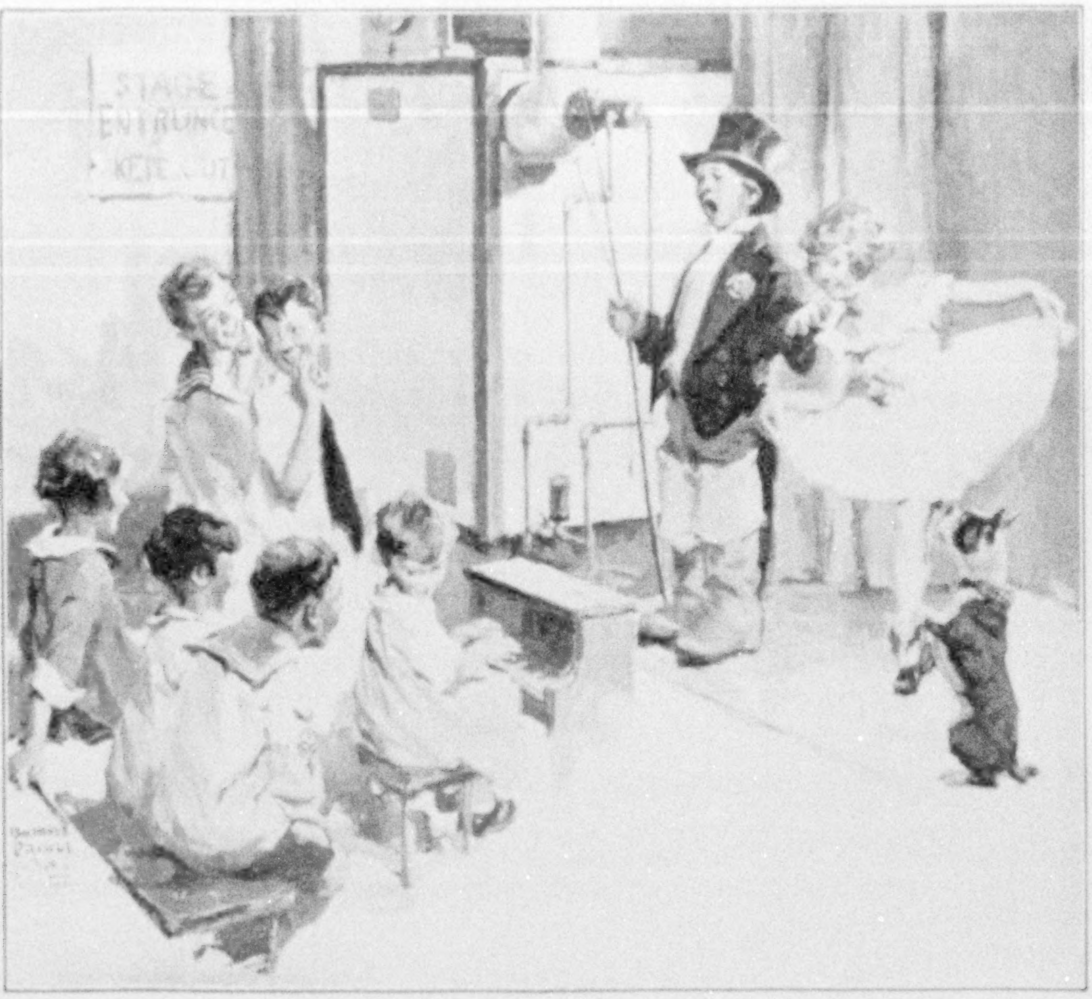
It is Body by Fisher which has enabled General Motors cars to triumph over the obstacles which formerly restricted to highest priced cars the finest in motor car style.

You see the result in the superb style, comfort and value of every Body by Fisher. So evident to all are these superiorities that each month new thousands of men and women are attracted to ownership of the General Motors cars listed below.

Oldsmobile . Pontiac . Chevrolet

BODY
by
FISHER

GENERAL MOTORS



Ups and Downs Outside Pass Unnoticed Inside the Home *"Where the Pup is Furnace Man"*

"Cold spell coming" or "Thaw predicted"—it doesn't matter to Bryant owners. The furnace will take care of itself even though no one is in the home when the change in weather arrives. Bryant Heating automatically adjusts itself to temperature fluctuations, is dust and soot-free and makes the basement a clean, usable part of the home.

NO one lifts a finger. No antics of the weather outside affect the steady, even warmth indoors. The Bryant-heated home laughs at blizzards. Even a sudden unforeseen drop from above freezing down to zero doesn't necessitate a trip to the furnace room. The temperature within remains unvarying within a single thermometer-measured degree. When the Bryant is lighted your comfort all winter—through cold spells and thaws—is assured. Yet your furnace cares are ended.

During the entire heating season you and your household enjoy comfortable, even warmth with complete freedom from fuel deliveries, furnace tending, coal and ash dust, roaring flames and odors. A single match is your winter's "kindling". Trips to the furnace room are timed by the calendar, not by the clock.

Most home owners will find this luxurious heating service well within their means. Any of the 37 Bryant offices will gladly furnish you with a dependable estimate for your home.

BRYANT GAS HEATING

~lets yourPup be your Furnace Man

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THE NEW FLEETWOODS

The Ultimate in Luxurious Coachcraft

For those who desire a motor car expressing their own tastes and individuality, the Fleetwood Body Corporation has collaborated with the Cadillac Motor Car Company in interpreting in the new Fleetwood-Cadillacs and Fleetwood-La Salles the very ultimate in luxurious coachcraft.

Style—"the invariable mark of any master," individuality of appeal and perfect craftsmanship, these have long constituted an ideal and a tradition with Fleetwood. They are in very fact symbolized by the name Fleetwood.

Three generations of coach-crafters passed this ideal and this tradition to the present Fleetwood Body Corporation which has, since, uninterruptedly specialized in the production of custom-built bodies precisely interpreting owners' peculiar artistic perception and preference.

As in the days of Early American coachcraft, Fleetwood's successors to those Eighteenth Century artisans with their Old World traditions of craftsmanship, still produce the highest quality work, today specifically destined for those fields of motoring where style factors—beauty, charm of contour, perfection of proportions, luxurious appointment—are paramount.

Representative creations of this famous line are now available in twenty-two exquisite models, Fleetwood designed and Fleetwood built, and can be had only in the new Cadillacs and La Salles. Varying body types and styles are on display in the Cadillac-La Salle showrooms of the more important centers throughout the country, and at our Salon and Studios, 10 East 57th Street, New York.

FLEETWOOD BODY CORPORATION

UNIT OF FISHER BODY CORPORATION • DIVISION OF GENERAL MOTORS

Eight Answers to that One Important Question

what to give that certain, certain someone Christmas day

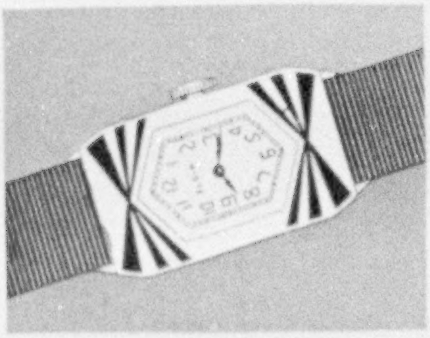
Probably, the way you feel about it oftentimes, you'd just about go to the ends of the earth to find the perfect gift.

But go no further than your nearest and coziest easy-chair... with this pageful of beauty to choose from.

For an Elgin watch has always been a perfect and permanent expression of Christmas sentiment.

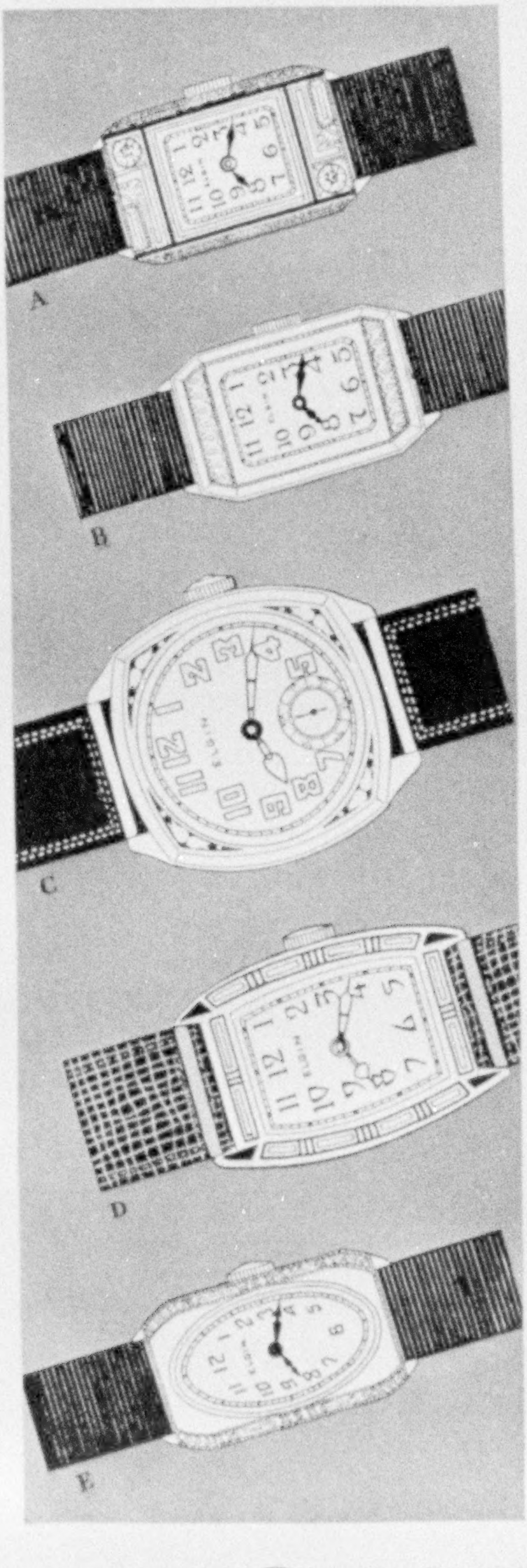
Now more than ever, for there are more Elgin watches than ever to choose from. More brilliant new watches than Elgin, or any other maker, we believe, has ever presented before!

And let's be practical for a moment. Your gift will rarely be out of service for it's an Elgin, but never for long when it is, for Elgin jewellers are everywhere, ready to repair the watch quickly and at reasonable cost. And always behind it is the famous Elgin guarantee.



Parisienne, inlaid with black enamel . . . $35

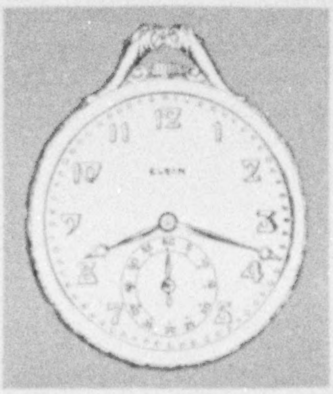
Wrist watches pictured actual size. Pocket watches approximately ⅓ reduction



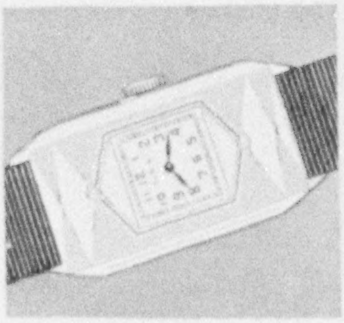
[A] . . . Set with 2 genuine diamonds; 2 synthetic sapphires . . . $68. [B] . . . An exquisite Elgin . . . $35. [C] . . . The famous Elgin Legionnaire . . . $21.50. [D] . . . Case inlaid with enamel. 15 jewel movement . . . $65. [E] . . . A smart, restrained style . . . . $35.

© ELGIN, 1928

[All prices slightly higher in Canada]

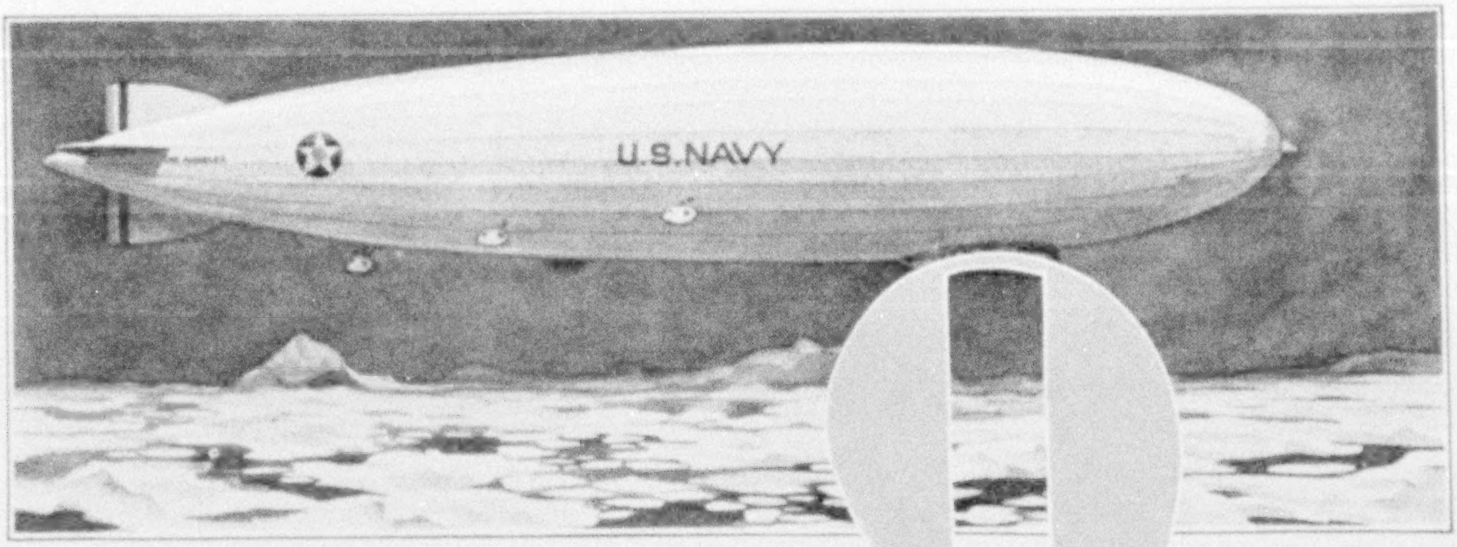


19 jewel C. H. Hulburd movement. 18 kt. white gold case . . . $350



Parisienne, blue, or black and white, enamel $35

ELGIN



On Navy Department searching expeditions over the frozen reaches of the North Atlantic, the U. S. S. Los Angeles used Eveready Prestone in her radiators for protection against freezing.

Whenever low temperatures bring freezing hazards, the motors of the "Los Angeles" are protected with Eveready Prestone

9 points of superiority

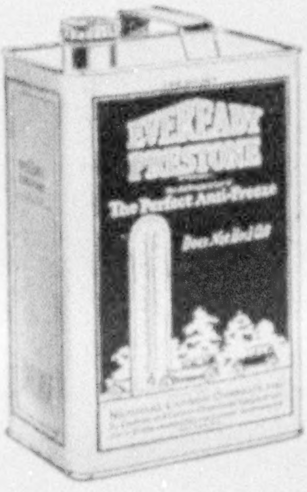
1. Gives complete protection
2. Does not boil away
3. Positively will not damage cooling system
4. Will not heat up a motor
5. Will not affect paint or varnish
6. Non-inflammable
7. Odorless
8. Does not become viscous at low temperatures; will not decompose at high temperatures
9. Never deteriorates—economical to use

When the Navy Department's giant dirigible "Los Angeles" takes the air in cold weather, its huge, costly motors are protected with the surest safeguard against freezing — Eveready Prestone. Low temperature hazards in flying permit no compromise in motor protection. That Eveready Prestone should be chosen for the "Los Angeles" is evidence of the unfailing protection it provides and the assurance with which you can use it in the radiator of your car.

Eveready Prestone is entirely different from other anti-freeze solutions or mixtures. It never boils away. You need never worry about evaporation or deterioration, for one supply lasts all season. It is unaffected by extreme changes in temperature. It is perfectly harmless and permanently safe, no matter how early you put it in the radiator or how long winter lasts. It has met with enormous success among hundreds of thousands of users.

Eveready Prestone, sold as a pure, *undiluted* product, is the most economical investment in winter insurance for every motorist. One supply is all he needs. One gallon to two gallons, depending on radiator capacity, will protect a car as long as cold weather continues. For complete protection, less Eveready Prestone is required than ordinary anti-freeze solutions or preparations.

Get your winter's supply of Eveready Prestone today at the nearest garage, automotive supply dealer or hardware store.



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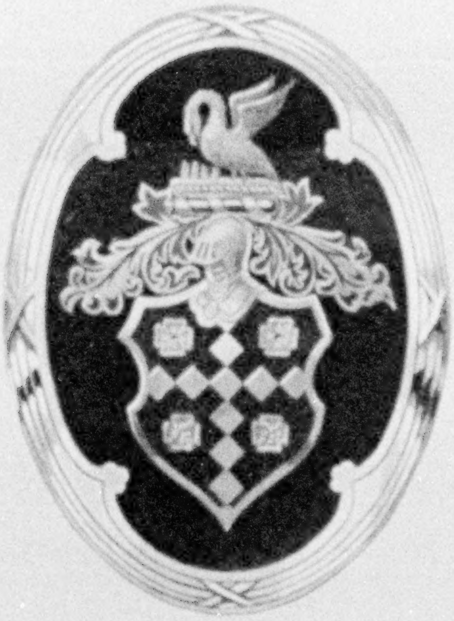
(TRADEMARK)
For the Preparation of
The Perfect Anti-Freeze

PACKARD



* * * * "Gules, a cross lozengy between 4 roses or. A pelican in her piety."

So, in the language of Ancient Heraldry is described the Coat of Arms and Crest of the old English Packard family, first transplanted to the new world by Samuel of that name in the year 1638 via the good ship Diligent from Windham.

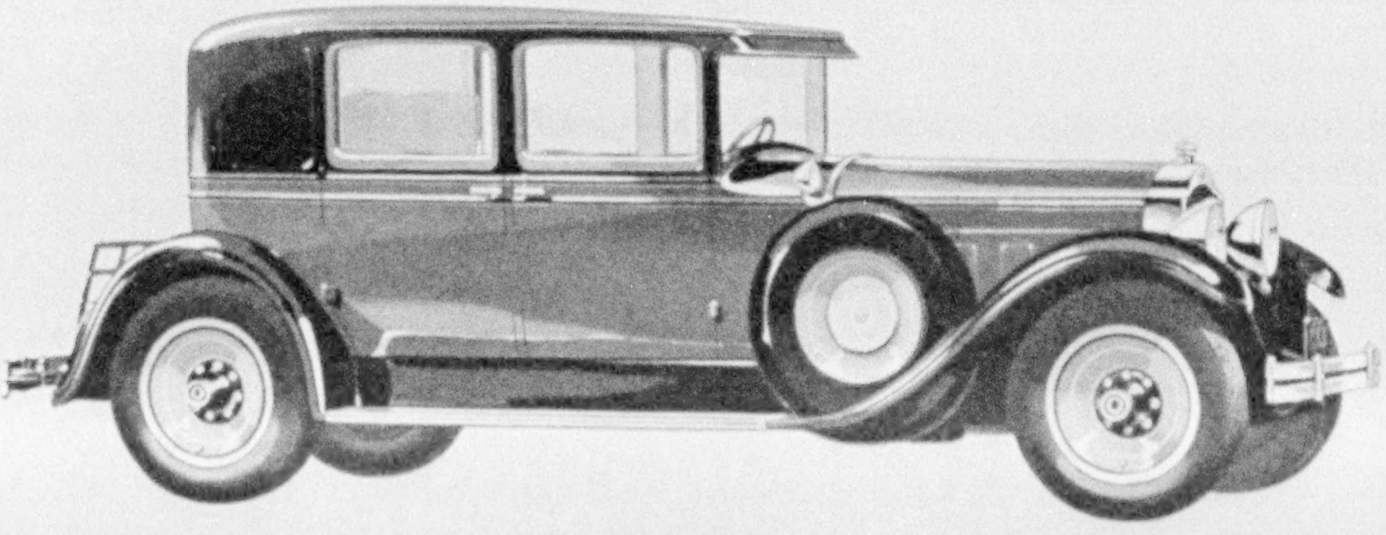
It was to be 290 years before that device was shown and known to fame in America—adopted with pride and as a mark of respect to James Ward Packard, and his brother and co-worker William, by the great company which they founded and lived to see win world leadership in the manufacture of fine cars.

For it was not in the Packard code to adopt a crest without meaning or significance, and the Packards were not the men to press their personalities or family in the public eye. So for thirty years the characteristic Packard radiator has neither borne nor needed a distinguishing symbol.

But now with the passing of Ward and William Packard, they who built largely with their own hands the first Packard car, the Packard Company has appropriately adopted that honorable family's Coat of Arms.

The Packard Arms will continue to stand for quality, taste and integrity—an everpresent pledge that the ideals established will always be faithfully upheld.

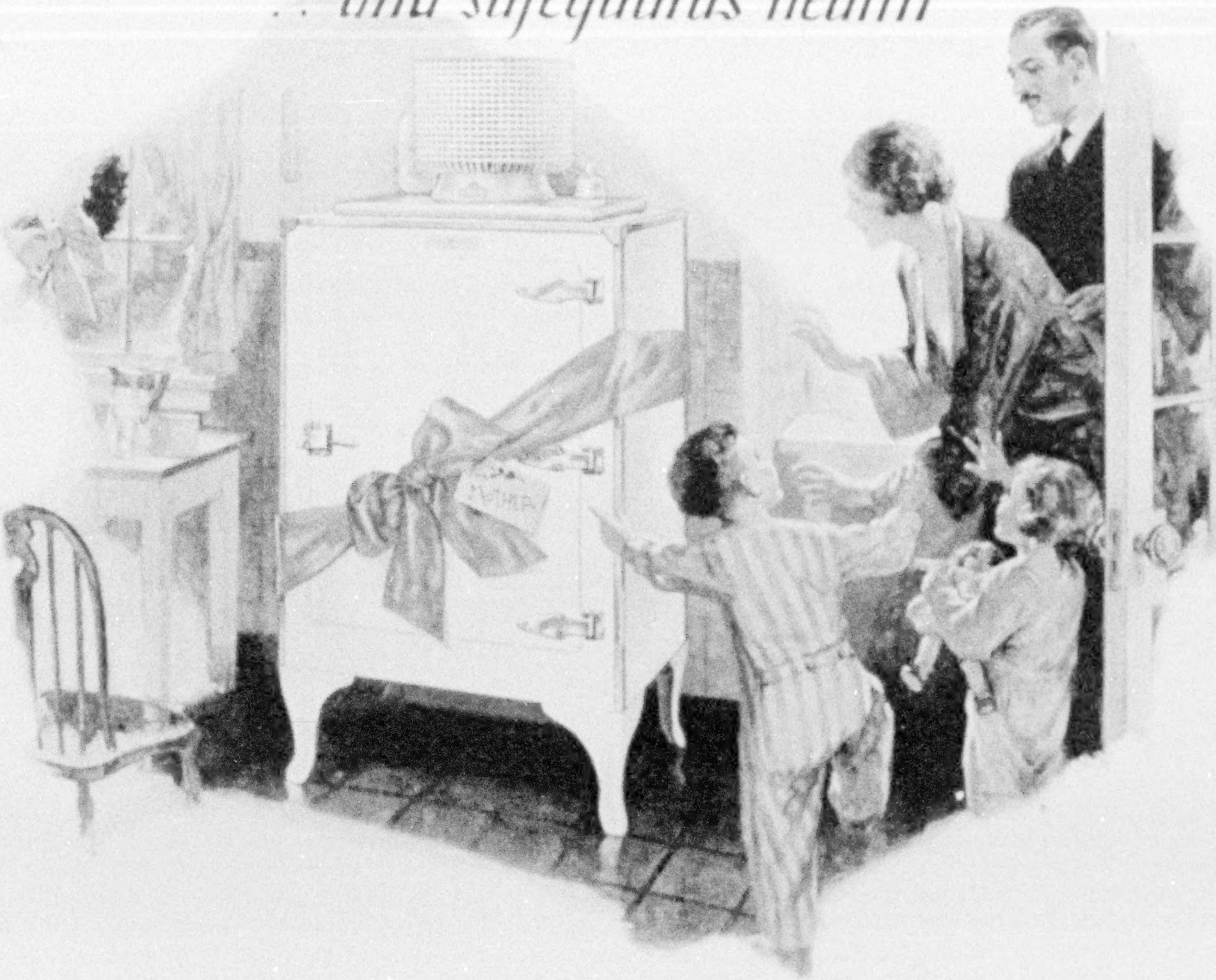
ASK THE MAN WHO OWNS ONE



KUM

The gift that simplifies housekeeping

. . and safeguards health



IF you could wrap lighter house-tasks in a nice little box and close them with a not-to-be-opened-till-Christmas seal, wouldn't you like to send them to some one you know?

Well, you can come pretty close to doing just that. A General Electric Refrigerator is one sure way of making life easier for the woman who runs the house.

It cuts marketing trips, it simplifies menu-planning, it gives new ease and variety to cooking. It keeps foods safely, healthfully fresh.

And now that you've decided on an electric refrigerator, consider especially this new-day General Electric. It is radically different from all others—really "years ahead" in design. It is so completely automatic that it never even needs oiling. All its machinery is safely sealed in an air-tight steel casing, on the top.

These refrigerators are produced and guaranteed by General Electric . . . . a strong assurance of their truly superior quality. Just drop us a card asking for Booklet R-12.

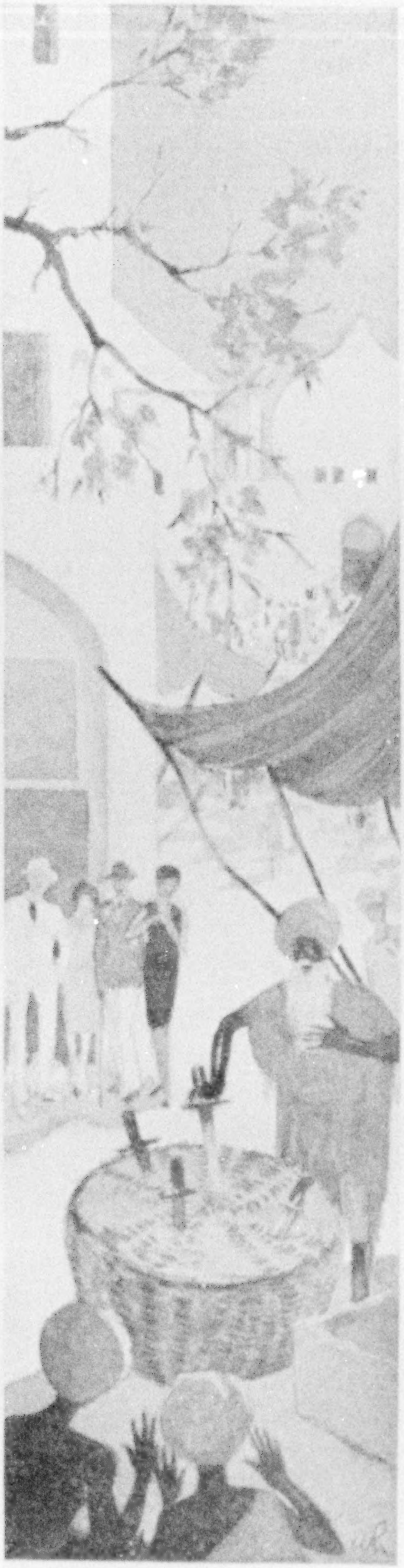
GENERAL ELECTRIC
Refrigerator

"Makes it Safe to be Hungry

ELECTRIC REFRIGERATION DEPARTMENT · OF GENERAL ELECTRIC COMPANY HANNA BUILDING CLEVELAND, OHIO

INDIA • AFRICA • ORIENT

Where..?



Is the wanderlust again upon you this winter? The world's greatest travel system offers you . . .

AN INDEPENDENT RAMBLE THROUGH INDIA

Come where Shah Jehan's Glass Palace catches the sun beyond the walls of Agra . . . where a princely Rajput rides a trotting ox in Jaipur . . . where the Himalayas — the lordly peak of Kinchinjunga — fill the horizon at Darjeeling. See India with Canadian Pacific. Yes, you self-explore. Canadian Pacific merely guards your customary comfort and insures special entree to every wonderful sight and event. Because Canadian Pacific is agent in North America for all the embracing State Railways of India.

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Here's "a something new," even for the bored globe-trotter. From Jamaica and Trinidad down to resplendent Rio . . . gay Buenos Aires. Then . . . lonely Tristan . . . on the delightful South Atlantic crossing to quaint Capetown. North, into South Africa . . . from Durban to Zulu ceremonies . . . Kimberley's diamond mines . . . herds of giraffe and zebra . . . Victoria Falls. Then, along the veiled East Coast . . . Dar-es-Salaam, Zanzibar, Mombasa. Egypt, the Mediterranean, Paris, London . . . as a climax. Aboard S. S. Duchess of Atholl, 1928's marvel of tropic-sea comfort, 20,000 gross tons. From New York, January 22. From $1500.

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Mediterranean Cruise, from New York, Feb. 4, Empress of Scotland. West Indies Cruises, from New York, Dec. 22, Jan. 10, Feb. 11, Duchess of Bedford (new). All with one management, ship and shore, by Canadian Pacific.

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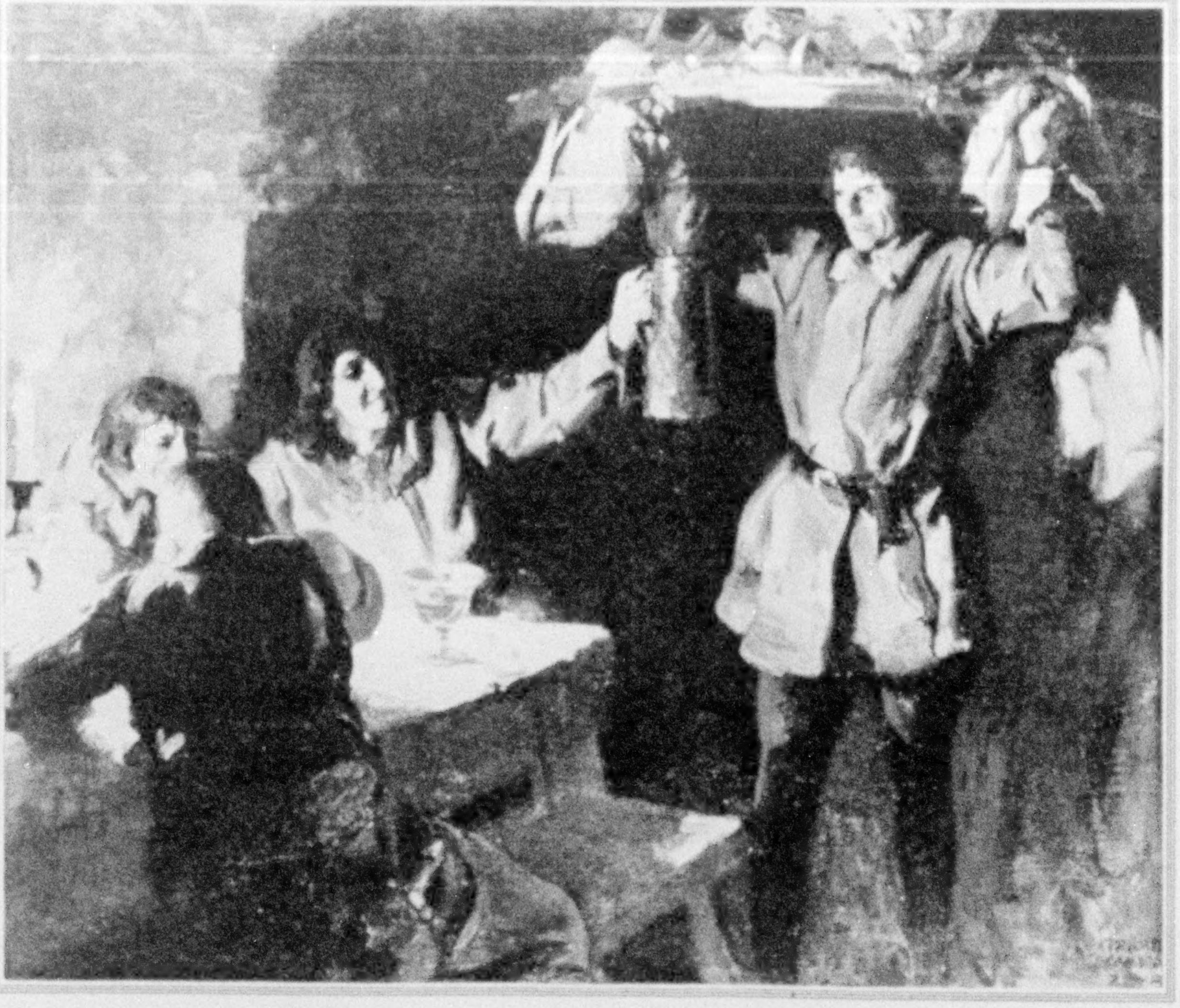


God rest Ye, Merrie Gentlemen

LANCASTER is beaten. The white rose mocks the red. Another winter . . . another Christmas . . . and England lies under forgetful snow.

Yew logs blaze beneath tavern rafters. All night the sound of singing comes from the castle. The boar's head is crowned with rosemary. The spiced brown bowl is passed from hand to hand. Lancaster or York? Who cares? Noel.

* * * *

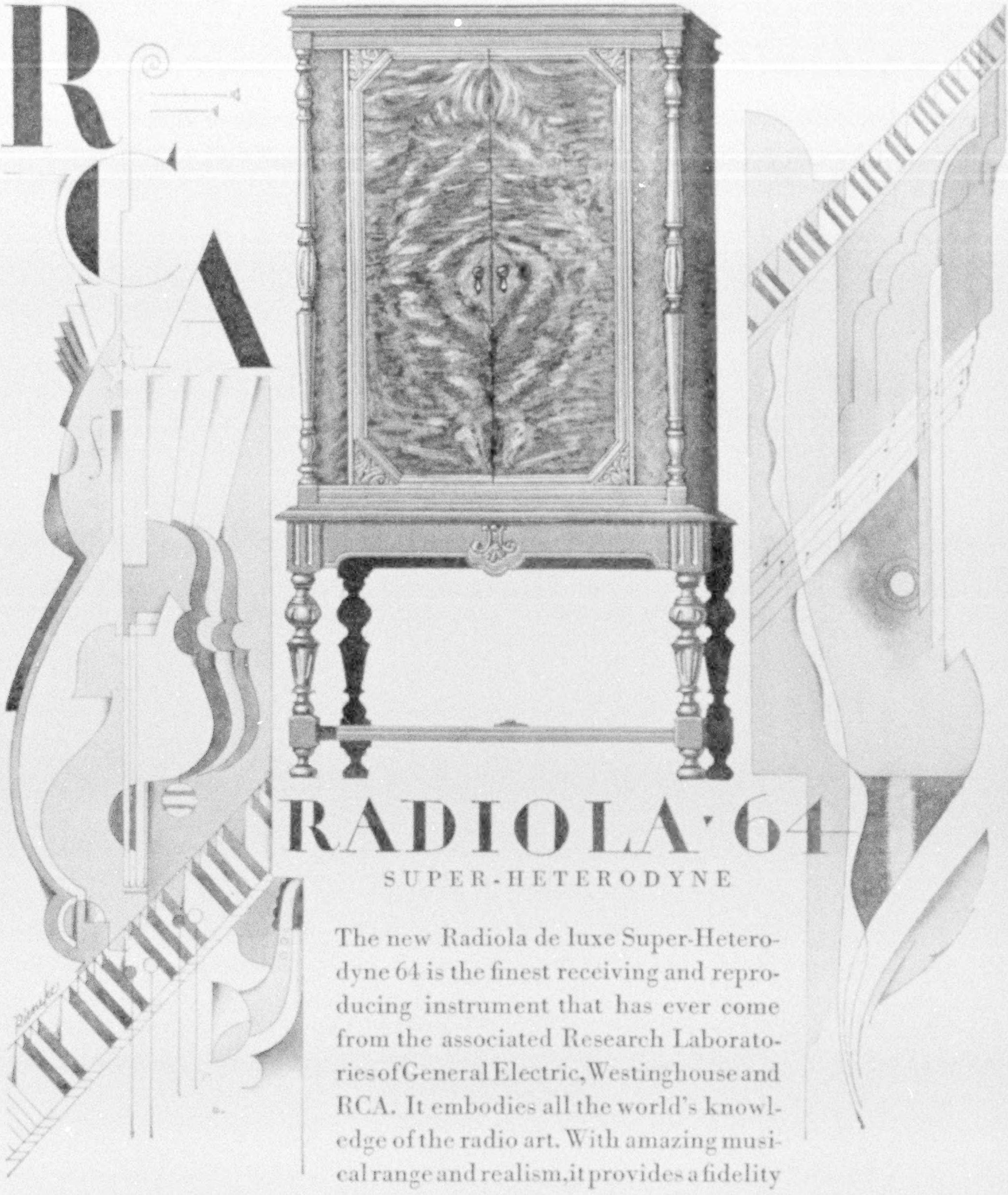
Another Christmas. The old words, the old songs come back. In thirty million homes the old customs are renewed. Holly and mistletoe, carols beneath the sky, and gifts exchanged, symbolic of the day of peace.

And what more ideal gift than the New Frigidaire? What better way to say the old, old phrase, "Merry Christmas"? For the New Frigidaire contributes to the happiness and safety of every member of your family, every day in the year. It is beautiful, powerful, incredibly quiet. It assures the constant low refrigerating temperatures which safeguard health and prevent food spoilage. It freezes an abundant supply of sparkling ice cubes. It provides delicious frozen salads and desserts. It brings a new convenience and a new economy into housekeeping. And it does all this, day after day, month after month, quietly, surely, automatically.

Let the New Frigidaire do for your family what Frigidaire is already doing for more than 750,000 others. And let it carry your Christmas greeting down through the months and years to come. Frigidaire Corporation, Subsidiary of General Motors Corporation, Dayton, Ohio.

THE NEW FRIGIDAIRE

PRODUCT OF GENERAL MOTORS



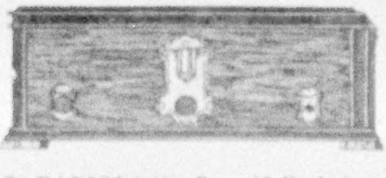
RADIOLA·64

SUPER-HETERODYNE

The new Radiola de luxe Super-Heterodyne 64 is the finest receiving and reproducing instrument that has ever come from the associated Research Laboratories of General Electric, Westinghouse and RCA. It embodies all the world's knowledge of the radio art. With amazing musical range and realism, it provides a fidelity of tone hitherto unknown. Exclusive features such as automatic volume control, and meter to insure accurate tuning. Simplified operation from house current. Finely finished cabinet of rich design, with ingeniously arranged doors!

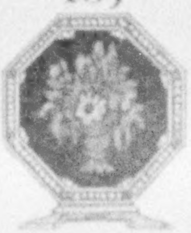
$550 (less Radiotrons).

60



RCA RADIOLA 60—*Beautifully designed table model of new Radiola Super-Heterodyne with A.C. electric operation. Single control with illuminated dial. Two-toned walnut veneered cabinet. An instrument of wonderful musical range and tone fidelity.* $175 (*less Radiotrons*).

103



RCA LOUDSPEAKER 103—*De luxe model of the famous 100A. The new design and tapestry covering make it highly decorative.* $37.50.

Buy with confidence where you see this sign

RADIO CORPORATION OF AMERICA

NEW YORK CHICAGO SAN FRANCISCO

Four Speed Advantages

Quiet and quickly responsive—"third" in the Graham-Paige four-speed transmission (standard gear shift) rapidly accelerates in traffic, and up steep hills. Fourth speed reveals a new smoothness and swiftness. We invite *you* to enjoy the advantages of driving with four speeds forward.

Joseph B. Graham
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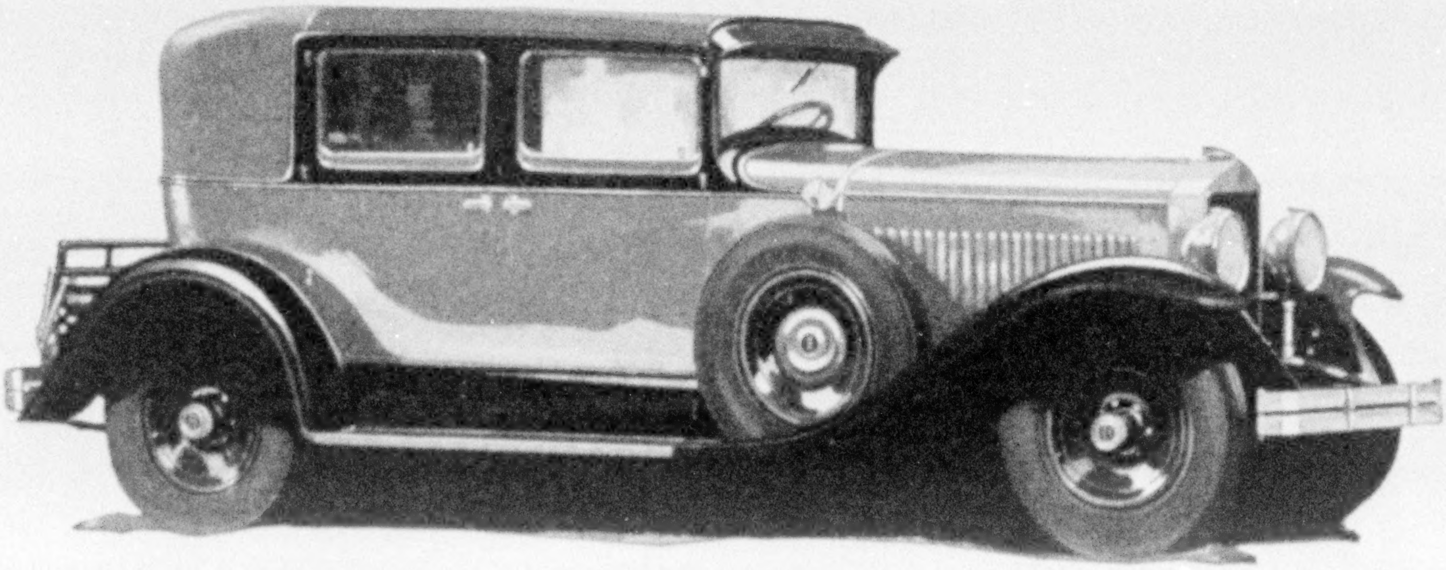
Ray A. Graham

Five chassis—sixes and eights—prices ranging from $860 to $2485. Car illustrated is Model 629, five-passenger Town Sedan, with 4-speed transmission (standard gear shift), $2085. All prices f. o. b. Detroit.



GRAHAM-PAIGE

What is the real foe of attractive teeth and mouth health?

Uncleanliness!

. . . thousands never have clean teeth because their dentifrices try to "cure" and fail to clean

You use a dentifrice on your toothbrush to clean your teeth more thoroughly and pleasantly than you can with the brush alone. So clearly the most important action of a dentifrice is to clean. Colgate's is made to give you the greatest possible safe cleansing power. It would not clean nearly so well if we tried to make it a medicine or treatment as well as a cleanser. And, anyway, your mouth most likely does not need medicine. If it did, you would go to your dentist.

Colgate's is made as dentists recommend

Years ago, before Colgate's was brought out, we went to leading dentists and said, "What kind of dentifrice would you like your patients to use? Would you like it medicated, strongly antiseptic, or antacid?" They answered, "Give us a simple, non-medicated dentifrice that really cleans. Nothing protects and beautifies teeth like cleaning."

Constant touch with the latest ideas of the dental profession and continuous research only emphasize the importance of a *clean* mouth. And on the advice of men who know most about mouth care, we continue to make Colgate's the finest dental cleanser that advancing experience and science can perfect.

COLGATE'S
RIBBON DENTAL CREAM

The searching, cleansing foam

When you brush with Colgate's you are cleaning your teeth—not doctoring them. You are cleaning, cleaning, cleaning.

The rapidly acting Colgate foam sweeps through your mouth—goes rushing, searching in and out and around teeth and gums—carrying away mucin deposits—polishing enamel glistening smooth—destroying acids that destroy teeth—sweetening all mouth surfaces.

A trial of Colgate's quickly shows that cleaning is the important thing in care of the mouth.

We will gladly send with our compliments a tube of Colgate's sufficient for ten days' use. Just return the coupon.

Colgate & Company, Dept. 205 L
595 Fifth Avenue, New York

Gentlemen: Please send me the booklet "How to Keep Teeth and Mouth Healthy," and a trial tube of Colgate's Ribbon Dental Cream.

Name ____________________

Address ____________________

MORE DENTISTS RECOMMEND COLGATE'S THAN ANY OTHER DENTIFRICE
MORE AMERICANS USE COLGATE'S THAN ANY OTHER DENTIFRICE

Lonely St. Helena and all of Africa

THE prison in the sea . . . its sheer cliffs rise grimly from the water and hide historic Longwood where Napoleon brooded until his death . . . St. Helena is but one of the features of the Cruise Round Africa.

Sailing January 12, the S. S. "Carinthia" visits the barbaric West Coast, bustling Cape Town, rarely visited Madagascar and the fascinating Big Game Country with its giraffes, antelopes, hartebeeste and zebras.

The complete Africa Cruise takes but a fortnight longer than the Mediterranean voyage - 74 days - Rates $1250 up.

Send for our Africa booklet

RAYMOND &
WHITCOMB COMPANY

126 Newbury St., and 165 Tremont St., Boston; 606 and 225 Fifth Ave., New York; 1601 Walnut St., Philadelphia; 176 North Michigan Ave., Chicago; 421 Book Bldg., Detroit; 423 West Fifth St., Los Angeles; 657 Market St., San Francisco, and agents in all principal cities.

Other Raymond-Whitcomb Cruises

Mediterranean Cruise

Sailing January 22 on the popular "Samaria" visiting Algeria, Sardinia, Malta, Egypt, Syria and Palestine, Cyprus, Turkey, Greece, Jugo-Slavia, Italy, Sicily, Corsica, the Riviera, etc.— 60 days — Rates $1000 & up.

West Indies Cruises

Sailing January 30 and February 26. Two comprehensive 25 day cruises on the "Columbus"—Rates $400 up.

Round the World Cruise

Sailing January 21, 1930 on luxurious "Columbus"—104 days — Rates $2000 & up.

Send for our Cruise Booklets

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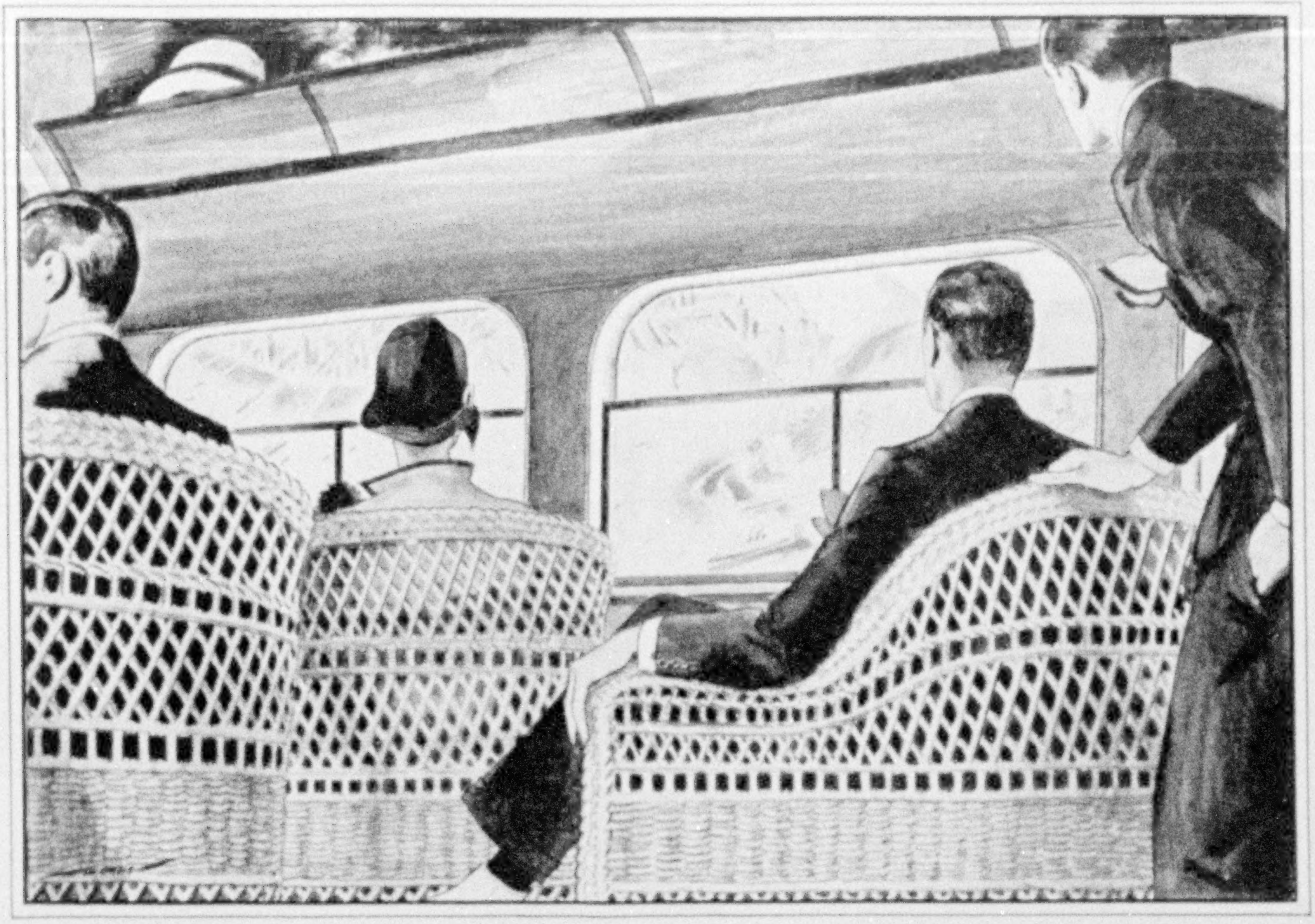
126 Newbury St., and 165 Tremont St., Boston; 606 and 225 Fifth Ave., New York; 1601 Walnut St., Philadelphia; 176 North Michigan Ave., Chicago; 421 Book Bldg., Detroit; 423 West Fifth St., Los Angeles; 657 Market St., San Francisco, and agents in all principal cities.



FROM SEA TO SEA

Today you have it in your power to go flying down to San Diego, to Matagorda Bay or Tampa . . . flying north to Puget Sound, to Hudson's Bay or Newfoundland!

For a new world is unfolding for you who lift to its inspiration. . . . Just as the discovery of America gave a fresh impetus to the imagination and daring of the people of Europe, so the discovery of this New World in the Sky is sweeping men and women of imagination into new realms of accomplishment . . . for the betterment of their business, for the sheer joy and thrill of traveling through space, in the search of adventure.

No longer are they measuring distance in miles. For, though the maximum speed of practical land transportation has reached its limit, airplanes today are cruising at 100 miles an hour; while each year 10 miles an hour are added to this speed; and experts anticipate a practical travel rate of 250 miles an hour within this generation. . . . When Grover Cleveland went fishing at Buzzard's Bay, his journey took two days from Washington; when Calvin Coolidge goes fishing in Wisconsin, his mail from the Capital reaches him in nineteen hours.

A business man flies 1500 miles to Texas to spend week-ends with his family. . . . For about $400 you can cross the continent through the air in 30 hours. . . . Oil men in Oklahoma think nothing of flying 50 to 70 miles into Tulsa for luncheon. . . . A New York broker conveniently commutes to Virginia by plane; while planes are flying literally in flocks at all the shore resorts, from Newport and Southampton to Miami; from Tampa to Coronado Beach and thence northward to the green-shadowed waters of the Olympic Peninsula. All inland cities of importance are joined by invisible trails along which hundreds of planes, carrying mail, passengers and freight, are flying.

Those who have seen the performance of the subsidized planes of Europe may learn with astonishment that the unsubsidized services of the United States are already well ahead of Europe.

The nation that leads Europe in commercial aviation possesses less than a hundred flying-fields; *the United States has many more than a thousand and our international lines are rapidly extending.* The great success of tri-motored planes on tremendous flights across the Atlantic, across the Pacific, across the Arctic, across the Gulf of Mexico, gives promise that travelers may soon wing southward in the comfort of a Pullman car to Mexico and Central America, to the Lesser and the Greater Antilles, and perhaps to the continental capitals of South America. These routes are already being surveyed.

Such planes as the giant, all-metal, tri-motored Ford, *with a million miles of successful flight under all conditions to its credit,* are already at hand, opening up these routes.

FORD MOTOR COMPANY

Rock Island

Sunset on the Desert.

DE LUXE
GOLDEN STATE
LIMITED
to California

Through the Winter Paradise of the Southwest

where the Desert—conservatory of sunshine by day, starlit fairyland by night, casts its enchanting spell over the playgrounds, luxurious hotels and neighboring ranches of Tucson, Chandler, Phoenix, Indio, Palm Springs.

- Only main line from Chicago to these resorts. Quickest by many hours.
- Direct low altitude way to California. Only 63 hours Chicago-Los Angeles. Shortest and quickest to San Diego.
- Route of other fine fast trains, notably the Apache.

ROCK ISLAND

THE ROAD OF UNUSUAL SERVICE

460

For detailed information, mail this coupon

Rock Island Vacation Travel Service Bureau
726 La Salle St. Station, Chicago, Ill.

Please send me literature descriptive of Arizona and California and full information regarding train schedules and service via Golden State Route.

Name ....

Address ....

He who reads his advertising ponders . . . what for Her who has everything . . . .

Solution!

MIGRATOR HAT BOX

WINSHIP MIGRATOR WARDROBE HAT BOX PAT'S PENDING

Only the original Migrator bears the trademark. Look for the Migrating bird!

FOR MOTHER . . a Migrator suitcase . . .
FOR DAD . . . the Migrator for men . . .
FOR SISTER SUSIE . . . a Migrator overnite.

Here are wardrobe trunk principles and suitcase conveniences. The rod shown in the top of the case carries 10 dresses—10,000 miles—without wrinkles or pressing. And you can remove any dress without disturbing the others. Compartment for shoes, hats, lingerie, etc.

MIGRATOR-Featherlites—in linen with gallant red trim—from $25 to $35.

MIGRATORS—in all smart leather combinations—suitcases, overnight cases, trunks, etc.—priced $10.00 and up.

MIGRATOR

Patented & Patents Pending

Imitations always lack something—Insist on a Migrator

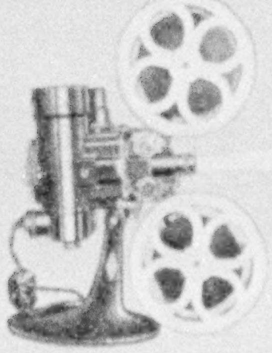
Adopted as standard equipment by two of the best known makers of airplanes.

W. W. Winship & Sons, Utica, N.Y.; New York Office, 39-41 West 32nd St., Hugh Carson Co., Ltd., Ottawa, Canada.

Filmo ~ the GIFT made famous by its quality

Filmo 75

The new pocket-size Filmo. Ideal for travel, vacation and field use. Your choice of three colors. Price, with beautiful leather case, $120.



Filmo Projector

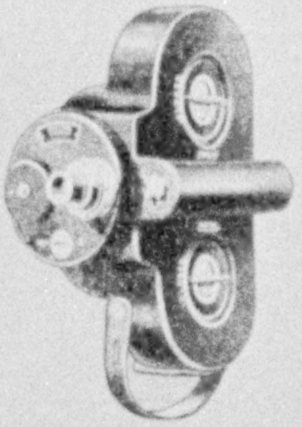
Used for showing the movies. Pictures are as beautifully deep and flickerless as those shown in best theatres. Price, with carrying case, $190.

THERE is no finer gift than a Filmo Camera and Projector. With them the happy recipient can make movies of the children as they change throughout the years . . . of Mother and Dad, as they would like to be remembered . . . of travel, sports and vacations. Permanent movie records that may be made *today* and enjoyed through all the tomorrows of the future . . . memories growing sweeter with age.

The Bell & Howell name is your invariable guide to highest quality in personal movie gifts. Practically all featured theatre movies are made with Bell & Howell professional cameras, after which Filmo cameras, though greatly simplified, have been patterned. Anyone can make Filmo movies of beautiful depth and brilliance. Simply look through the spyglass viewfinder, press the button and "what you see, you get"—*in living action.*

For black and white pictures, Filmo cameras use Eastman Safety Film (16 mm.)—in the yellow box—both regular and panchromatic—obtainable at practically all dealers handling cameras and supplies. Filmo cameras and Filmo projectors are adaptable, under license from Eastman Kodak Company, for use of Eastman Kodacolor Film for home movies in full color. Cost of film covers developing and return postpaid, within the country where processed, ready to show at home or anywhere.

See a Filmo dealer for complete demonstration or mail the coupon for descriptive Filmo booklet.



Filmo 70

The finest and most adaptable movie camera ever built for amateur use. Price, with Scotch grained leather case, $180.

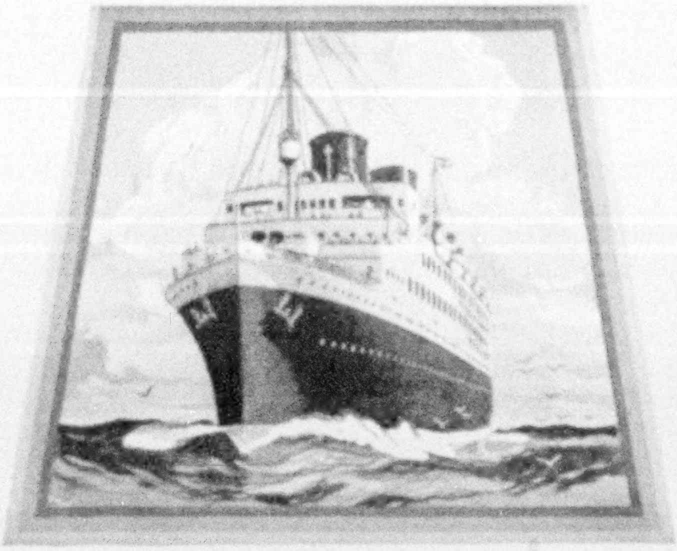
BELL & HOWELL

Filmo

BELL & HOWELL CO., 1817 Larchmont Ave., Chicago, Illinois
Please mail me your descriptive Filmo booklet "What You See, You Get."

Name. . . . .

Address. . . . .



New Deluxe Sister Ships Shawnee and Iroquois

THESE mammoth new steamers are giving a new distinction to that glorious winter journey to Miami and Havana. Each is like a gracious and satisfying hotel . . . . luxurious . . . . colorful . . . . diverting . . . . the supreme achievement in modern travel!

To **HAVANA** & **MIAMI**

Charmingly decorated suites and bedrooms . . . . with a wide range of choice and price. Spacious lounges . . . . broad open decks . . . . glass-enclosed promenades . . . . concerts . . . . dancing . . . . deck sports . . . . all that a gorgeous new ship with its endless marvels can place at your disposal!

Special Winter Service from New York to Havana during January, February and March —with a day's sightseeing at Miami, en route. Attractive all-expense tours including hotels and sightseeing trips.

Also regular sailings, New York to Jacksonville and Miami, calling at Charleston, S. C. Special non-stop express trips by S. S. Iroquois, New York direct to Miami every Saturday during December.

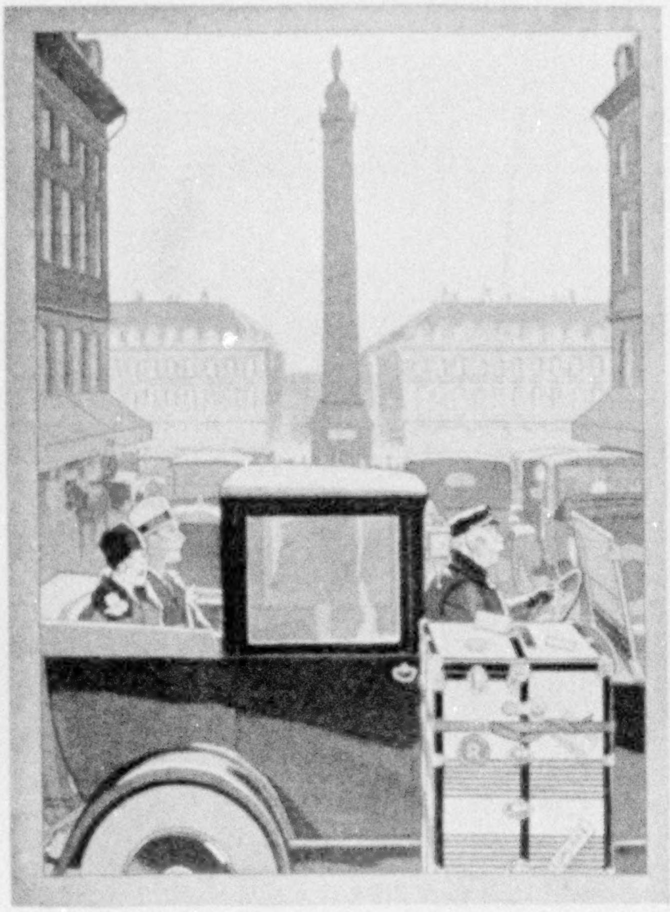
Automobiles carried on all Steamers

For complete information apply to

CLYDE LINE

25 West 43rd St. or Pier 36, North River,
New York, or any authorized Tourist Agent.

AGWI LINES

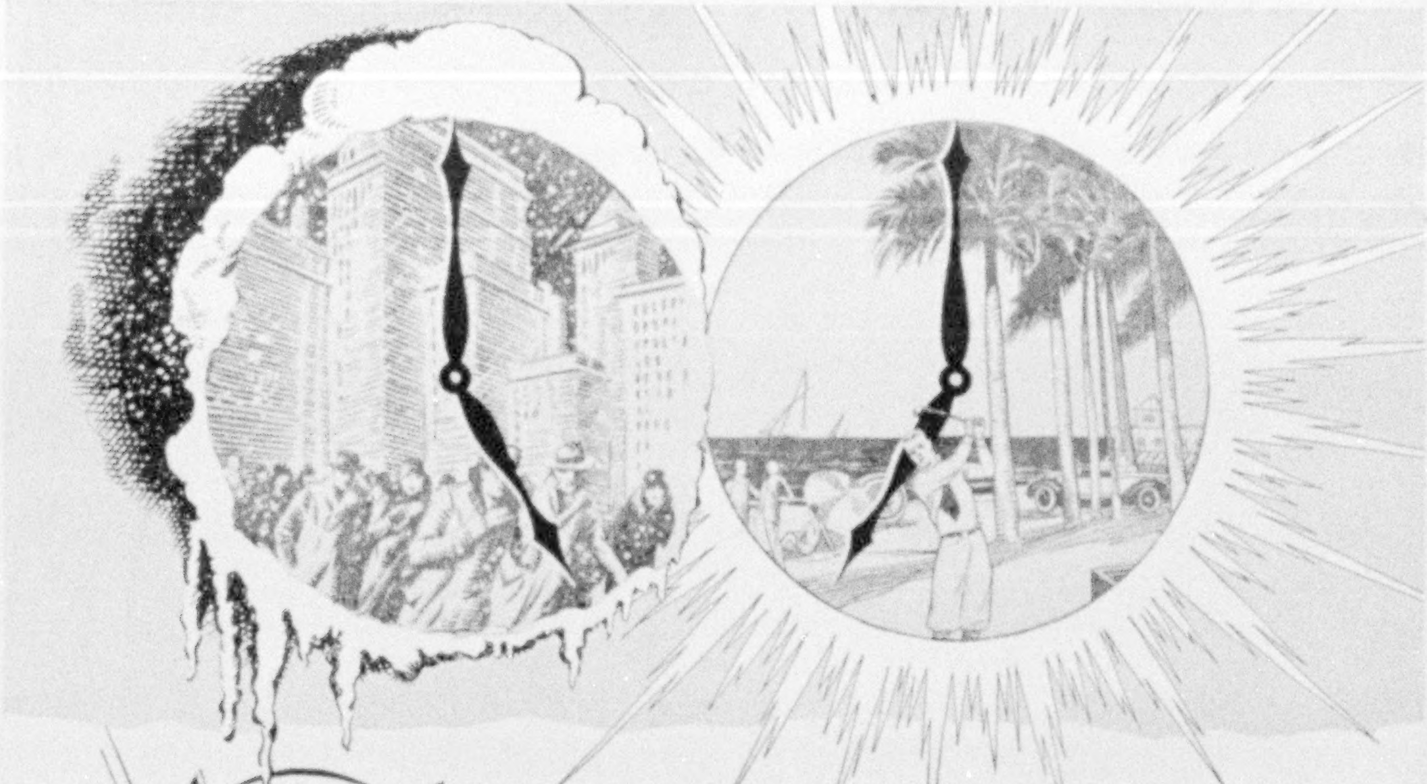


Oshkosh Wardrobe Trunks
make your clothes last longer

An attractive descriptive booklet, "Your Home Away From Home," will be sent you on request to 464 High Street, Oshkosh, Wisconsin

THE OSHKOSH TRUNK COMPANY
Oshkosh, Wisconsin, *and* 8 East 34th St., New York City

OSHKOSH
TRUNKS



"Pleasure Saving Time"

HAVANA, smartest city in America, offers sportsmen and recreation-seekers everywhere real *"daylight saving!"*

Two hours before the first glimmers of dawn gild the Woolworth Building in Winter, golfers are teeing up in *broad daylight* in Havana. And *two hours after* a cold winter night has blanketed workers homeward-bound on Broadway, a coat of sunburn is still possible on the coral-bound beaches.

Four hours more—for golf, yachting, bathing, fishing, riding, motoring on velvet highways (bring your car in free of duty), tennis and polo, racing, and the smart amusements of the Jockey Club.

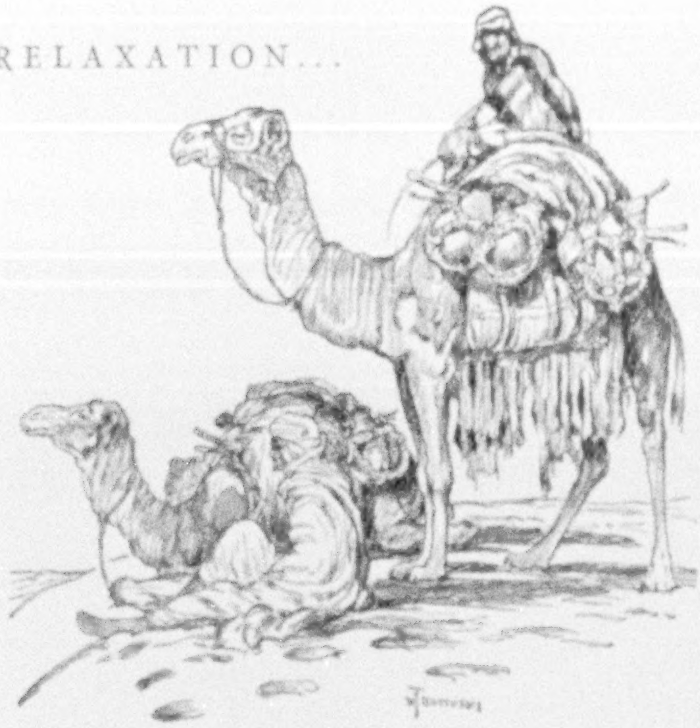
And when the sun's livid ball crashes suddenly beneath an horizon shot with color—there's Jai-Alai, fastest game on earth—and, of course, the Casino, shrine of "Lady Luck," with the best cook west of Paris and the best orchestras south of Longacre Square.

For information write to the Cuban National Tourist Commission Havana, Cuba; any Cuban Consulate; any travel bureau.

HAVANA

SMARTEST CITY IN AMERICA

RELAXATION...



Come to the MEDITERRANEAN on the HOMERIC

Just as the camel is the super-travel-vogue of the desert, so is the Homeric—"The Ship of Splendor"—*the* cruise-ship to the Mediterranean . . . she is the largest steamer on this route and presents an itinerary that includes every place of proven interest from metropolis to mosque . . . her appointments and creature comforts, her interesting entertainments aboard and ashore, her opportunities for relaxation stand unsurpassed, . . . rightly her cruise is called the

CRUISE SUPREME

She sails from New York January 26th next . . . 14,000 miles . . . 67 days . . . at the most seasonable time of the year . . . Madeira, Cadiz, Gibraltar . . . Algiers, Tunis . . . Naples, Athens, Constantinople . . . The Holy Land. . . Egypt . . . The Nile . . . Palermo . . . Naples . . . The French Riviera . . . Gibraltar . . . returning via Southampton . . . Stop-over privileges in Europe.

Let us send you the full particulars

THOS. COOK & SON

in co-operation with

WAGONS-LITS CO.

New York Philadelphia Boston Baltimore Washington
Chicago St. Louis San Francisco Los Angeles
Portland, Ore. Toronto Montreal Vancouver

There's Only One Camera for such action

GRAFLEX

It's the one camera that shows you, definitely, in advance, exactly what the composition and focus of the final picture will be. . . . . . .

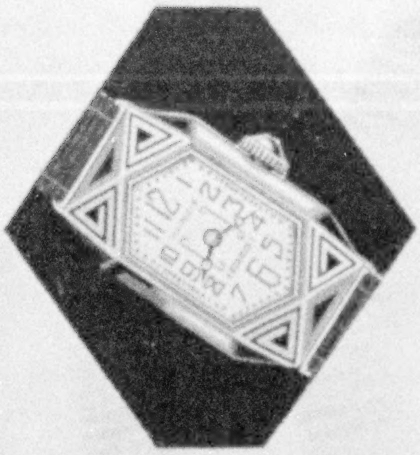
And now there's a Graflex priced within reach of everybody. "Series B"—3¼" x 4¼"—speed up to 1/1000 second—$80—other models $85 to $375.

Featured by A Good Dealer Everywhere

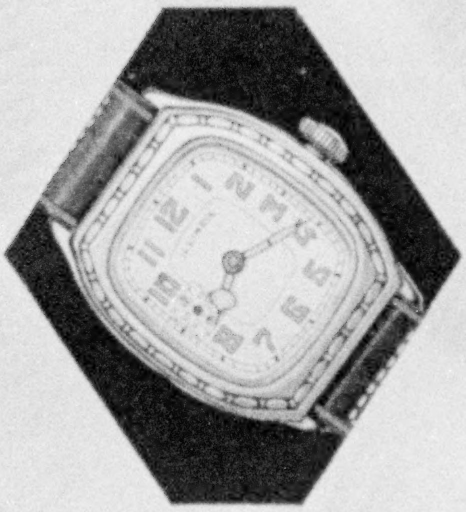
GRAFLEX

PERFECTLY SIMPLE SIMPLY PERFECT

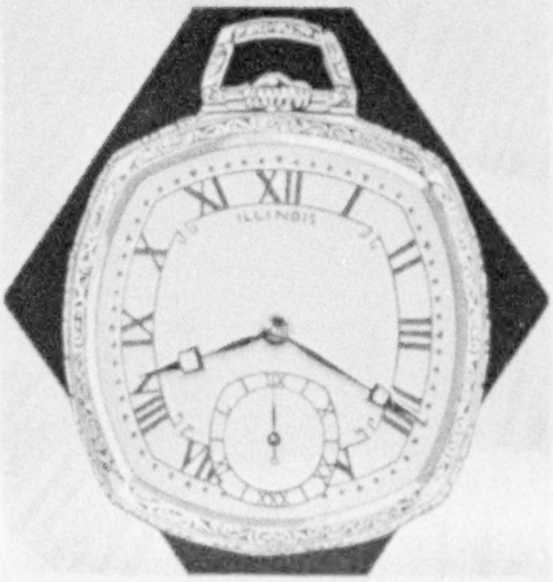
FOLMER GRAFLEX CORP. ROCHESTER, NEW YORK



The Berkeley. This charming watch has a delicate tracery of design in dark red and black hard enamel inlaid in its 14k white gold-filled case. A 17-jewel watch of Illinois craftsmanship, which insures dependable timekeeping. $55.

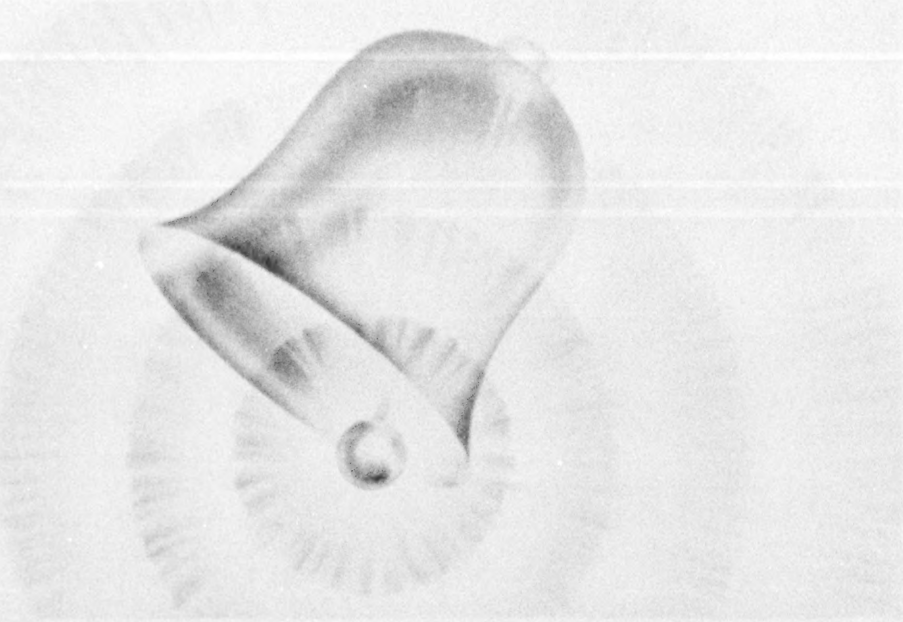


The Beau Brummell is style plus! Tailored to the wrist, the eye and the heart. It is one of those watches that improve with the wearing, creating new pride of possession each day. Illinois tradition underwrites its fine 17-jewel movement in beautiful 14k gold-filled case. $50



The Marquis-Autocrat. An unusual watch in both performance and appearance. A rare combination of the dignity of a pocket piece with the attractive influence of unconventional design. In 14k gold-filled cushion-shaped case, this 17-jewel watch deserves its popularity. $55.

202



The Joy of Living

Bells, holly, packages, memories, smiles and joys—this is Christmas!

Good friends and kin are all at once a part of joyful life. It is good to live and give!

This for Brother and that for Mother with all the tingling satisfaction of selecting well and knowing that the Christmas seal hides a host of pleasures.

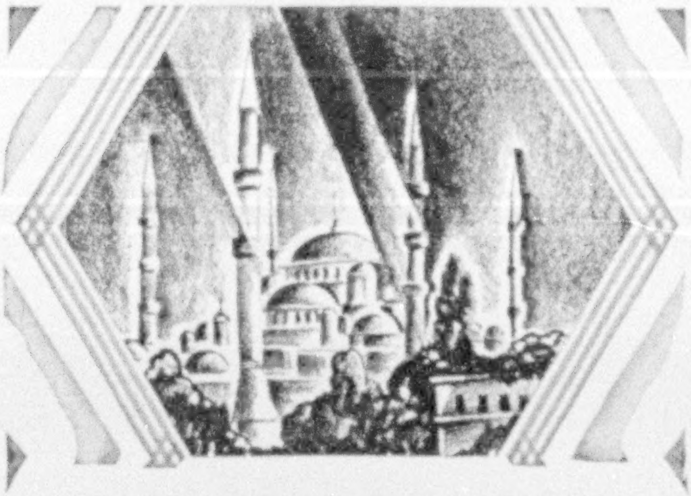
The pleasure of giving and receiving an Illinois Watch will not be momentary, but will last and grow with increasing pride in its sheer beauty and faithful service as a precious timepiece.

Behind such a gift are more than 50 years of Illinois painstaking craftsmanship and science—a half century of building more than a fine watch, a great American watch.

The
ILLINOIS WATCH

Established 1870
SPRINGFIELD, ILLINOIS

MAKERS OF THE FAMOUS ILLINOIS
BUNN SPECIAL RAILROAD WATCHES



MEDITERRANEAN AND EGYPT

12,000 miles on a palatial ocean liner visiting the alluring lands of the sun-bathed Mediterranean. A tempting itinerary covers Madeira, Gibraltar, Algiers, Monte Carlo and Nice, Italy, Greece, the Holy Land, Egypt and Sicily. Stop over from ship to ship, if you wish. Also optional return by a north European port. $695 (up), with shore excursions.

S. S. Adriatic, Jan. 10 and Feb. 28
S. S. Laurentic, Jan. 10 and Mar. 9

WEST INDIES AND MEXICO

Can you spare 22 days—or 16 or 17? Even with 11 days you can indulge in a glorious winter holiday. Four delightful short cruises, planned for busy people, on the great liner *Lapland*. A wide choice of itineraries—covering Mexico City (exclusive with the *Lapland*), the Panama Canal, Bermuda (at Easter), Havana, Nassau, etc. Sailing dates: Jan. 31 (22 days); Feb. 25 (16 days); March 16 (17 days); April 6 (11 days).

WHITE STAR LINE
RED STAR LINE
International Mercantile Marine Co.
No. 1 B'dway, New York, our offices elsewhere, or authorized agents.

Enjoyment insurance for your trip to foreign lands

THE American Express—one of America's great institutions—has built up a vast organization of service to tourists who carry its Travelers Cheques. It maintains scores of uniformed representatives at important foreign ports, depots and frontier points. These travel experts serve the traveler in many ways. They help with passports, forward baggage, provide railroad and steamship tickets and supply helpful local information courteously and efficiently.

All this personal service is automatically YOURS when you change your money into American Express Travelers Cheques. In addition, this sky-blue currency safeguards your money against theft or loss and assures you of spendable funds *everywhere* you travel, whether to the Orient, Mediterranean, West Indies or on a winter cruise.

Issued in denominations of
$10, $20, $50 and $100
Cost 75c *for each* $100

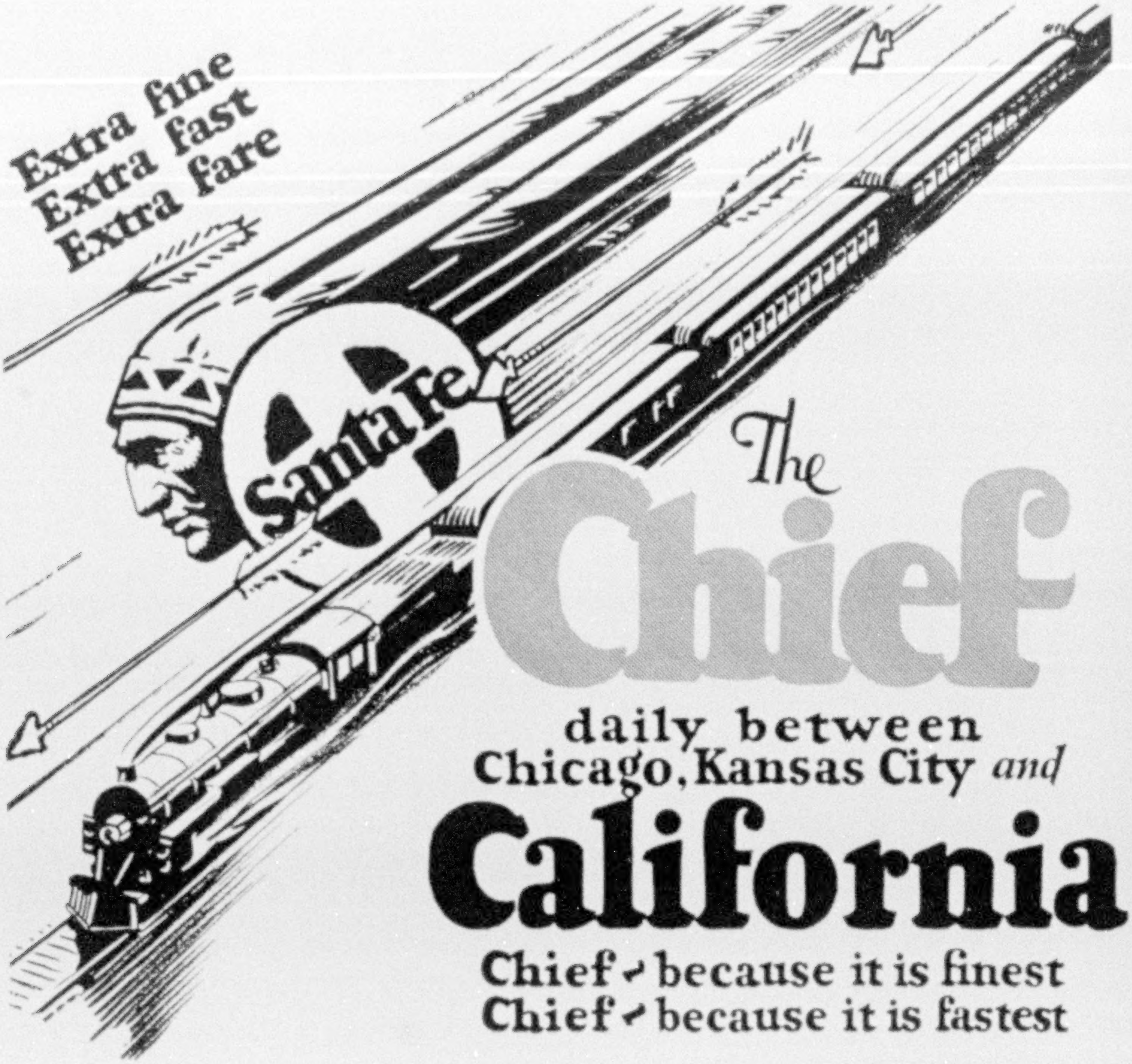
Sold by 22,000 Banks, American Express and American Railway Express offices. Money insurance AND enjoyment insurance for your winter trip are yours the moment you buy

Safe anywhere
Spendable everywhere

AMERICAN EXPRESS
Travelers Cheques

Steamship tickets, hotel reservations, itineraries, cruises and tours planned and booked to any part of the world by the American Express Travel Department

ALL AMERICAN EXPRESS CHEQUES ARE BLUE



The Chief

daily between
Chicago, Kansas City *and*

California

Chief — because it is finest
Chief — because it is fastest

The Chief seems to have garnered much of California's compelling charm. As you step into its spacious cars complete in a perfection of readiness, you are at once captivated by that sensation of well-being, of all-permeating comfort and enjoyment, which is the very essence of California.

Ask about our California Mid-Winter Escorted Tours—all expense—Indian detour, Grand Canyon, Phoenix and Yosemite en route.

The Santa Fe operates six daily trains to California. The famous Fred Harvey dining service "all the way."

mail this coupon

Mr. W. J. Black, Pass. Traf. Mgr., Santa Fe System Lines, 918 Railway Exchange, Chicago
Am interested in winter trip to ______________________
Please send detailed information and descriptive folders.
____
____

Save Your Eyes

Prof. E. L. Eaton, University of Wisconsin, says: *"It is a joy to read a book of any size resting easily in a rocking chair. Thousands will now have a new joy reading while resting."*

Insures
Correct
Posture

The Eyes
of the
World
Need
It

At last a Long-Felt Human Want is Filled by the Invention of this Great Necessity—Dr. Farrington's Portable

Reading Table for the Lap

Conserves and Prolongs the LIFE OF YOUR EYES

Here is the helper you have always needed. It saves your eyes—conserves your energy—permits concentration with **real relaxation** and absolute comfort. The **Farrington** supports books, magazines, reading matter, typewriter, writing materials, etc., **at just the right angle to insure correct vision,** regardless of position.

SIT RIGHT — READ RIGHT — FEEL RIGHT

Think what this means! Comfort, enjoyment, greater mental and physical energies. Greater facility for mechanics of reading or writing. **Genuine relaxation.** The Farrington allows you to assume a comfortable position when reading, writing, etc.

Students Delight in Its Use

Men, Women and Children Should HAVE A FARRINGTON

You cannot afford to go longer without this remarkable device for the conservation of your vital forces. It will help everyone who reads, writes or works. It is indispensable to invalids, sick folks and shut-ins.

NATURE DEMANDS ITS USE

—Prevents Eyestrain
—Conserves Mental Energy
—Insures Correct Posture
—Permits Greater Concentration
—Conserves All Vital Forces

IDEAL GIFT

You couldn't buy a more practical gift than the Farrington. It's light (less than 44 ozs.), handy, durable, portable, collapsible and instantly adjustable to any position. Size, 12 x 18 inches, folds to one inch. Should last a lifetime.

STYLES AND PRICES

Students' Model . .	$5.00
1. Natural Finish . .	6.50
2. Walnut Finish . .	7.50
3. Mahogany Finish .	7.50
5. Genuine Walnut .	9.50
6. Genuine Mahogany	9.50

State Style Desired

PREPAID IN U.S.A. If you wish table equipped with special detachable legs, as shown, add $1 to above price.

SEND NOW You will be delighted with the Farrington. Your money back after 5 days' trial, if you are not satisfied. Personal check accepted or sent C. O. D. if desired.

The FARRINGTON
COMPANY
21 W. Elm
Dept. 11
Chicago,
Illinois

A NEW Service

— Bind — Your National Geographics

Beautifully — Permanently

THE NATIONAL GEOGRAPHIC
EDWIN ALLEN COMPANY
CHICAGO

TELL us how many back copies of Geographics you have for binding, and we will send you without charge our self-addressed, self-sealing fiber shipping cartons. Mail your Geographics to us in our boxes. We will bind them *permanently* in beautiful art cloth, leather-grained, with special National Geographic design stamped in high relief in gold and green. Volumes de luxe for your library, $3.00 per volume, postage paid in U. S. Or, sturdy gold-stamped buckram (choice of colors) $1.75.

Both kinds all sewed to open flat on table and bound, like regular books, for easy and safe handling. Expert workmanship; prompt, dependable service; lowest cost, quality considered. **Your satisfaction guaranteed.**

Write for FREE Fiber Shipping Carton

[*Write today for your free fiber shipping carton and for illustrated color folder. Please state number of copies to be bound.*]

Edwin ALLEN Company
2249 Calumet Avenue, Chicago

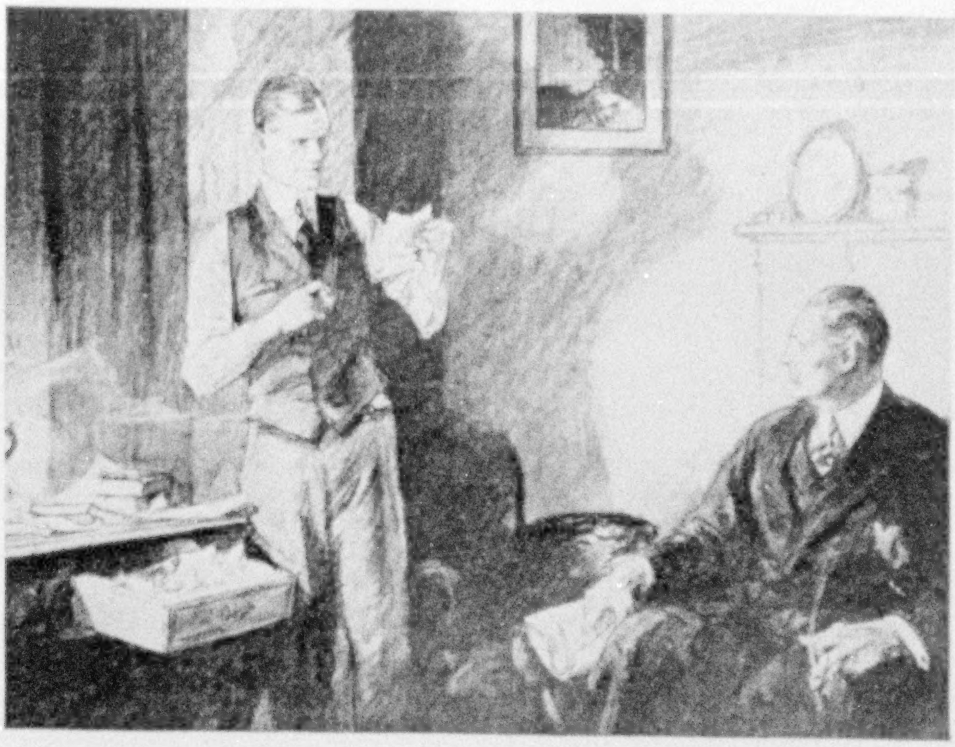
COOK'S NILE SERVICES

The Nile is Africa's greatest river and one of the world's longest. Ancient cities animate its colorful banks. Our own Nile Steamers and Dahabeahs are the foremost, the most comfortable and most luxurious means of all Egyptian navigation. Regular sailings from Cairo to the First and Second Cataracts. Services begin November 7.

Thos. Cook & Son
585 Fifth Avenue, New York
in co-operation with
Wagons-Lits Co.
701 Fifth Avenue

SO FEW MEN CAN DECIDE!

Can you?



THIS happened only a few weeks ago.

A man who had been promoted to a new position, with much larger income, sat talking with a friend. "It's funny what little things influence our lives," he remarked. "Three years ago I was reading a magazine and clipped a coupon from an advertisement—something I almost never do. The coupon put me in touch with the Alexander Hamilton Institute, which laid out a definite course in business reading for me.

"The first time the president of our company ever indicated that he was conscious of my existence was about a month later when I ran across something in my reading that happened to be of very immediate interest to him. From that moment he began to look on me as something more than just a name on the payroll. You know what's happened since."

The other man sat quiet a moment. Then he rose and, walking over to the table, pulled out the drawer and produced a wrinkled bit of paper.

"I clipped one of those coupons once," he said, "but I didn't do anything more about it. Here it is" . . . he held it out . . . "more than four years old."

That little incident reveals one of the fundamental reasons why some men go forward and others do not. Up to a certain point all men are interested in their business future. They will read about success and talk about it; but at that point they divide sharply into two classes. One group merely talks; the other acts.

Think of the four years that have passed since that man clipped that coupon. In that time, Charles E. Murnan, who was a clerk in a retail store, became vice-president of the great United Drug Company. He says: "I would recommend the Course to anybody, if he had to borrow the money to take it."

In that time, J. A. Zehntbauer, who was a wholesale dry-goods salesman, became president of the Jantzen Knitting Mills of Portland, Oregon. He says: "50% of my success could be attributed to my contact with the Alexander Hamilton Institute."

And all this while the man who was interested, but lacked the power of decision, has gone along with petty salary increases, when he might have made a direct short cut to executive opportunity and increasing earning power. Some day he will arrive, but he has sacrificed the joy of succeeding while he is still young.

This is not an advertisement in the ordinary sense. It is a business editorial. Two men will read it. One will say, "That is interesting." He may even go so far as to clip the coupon, but it will never be mailed. At the critical moment of decision he will be tried and found wanting.

The other man will say: "This thing involves no obligation or cost. The Course has helped more than 358,000 men to shorten their path to the top. I have a duty to myself and my family to investigate it." He will clip the coupon and *it will be mailed.*

You have decision. Will you let us lay before you a definite plan of business reading, worked out by men who have made an unusual business success? Give one evening to it; decide, alone in your own home, without haste or pressure.

ALEXANDER HAMILTON INSTITUTE

Executive Training for Business Men

To the ALEXANDER HAMILTON INSTITUTE, 708 Astor Place, New York City

Send me the new revised edition of "Forging Ahead in Business," which I may keep without charge.

Signature .... Business Position ....

Business Address ....

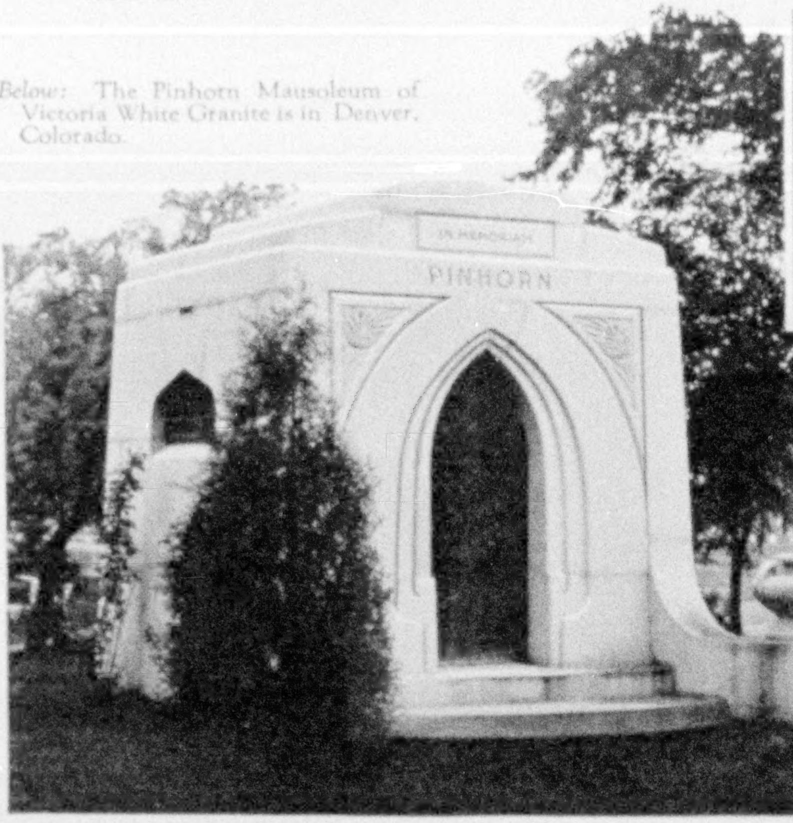
Modern Business

IN CANADA, *address the Alexander Hamilton Institute, Limited, C. P. R. Bldg., Toronto*
IN AUSTRALIA, *11c Castlereagh St., Sydney*

At right: The Lesher Tribute, near Dayton, Ohio, is of Milford Pink Granite, in the new suede finish.

Below: The Pinhorn Mausoleum of Victoria White Granite is in Denver, Colorado.

(Design above copyrighted by the Dodds Granite Co.)



SINCE it is possible to build such beautiful structures as memorials to loved ones, you should be assured of everlasting material and perfect construction. Our Granites are furnished under a Guaranty Bond of quality, and there are over sixty-five years of experience to guide us. Our book, "Modern Memorial Art," is assisting many in their problems. Write for it now.

Chicago Studios:
BUILDERS' BUILDING
La Salle Street and Wacker Drive

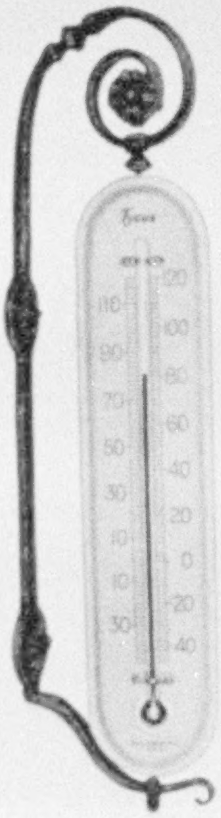
Quarries and Manufacturing Plants:
MILFORD, MASS., KEENE, N. H.
STONY CREEK, CONN.

The DODDS
GRANITE COMPANY
Established 1864
814 Pershing Square Bldg. NEW YORK CITY

Exclusive Producers:
MILFORD PINK GRANITE
VICTORIA WHITE GRANITE
STONY CREEK GRANITE

Above Names Protected by Trade Mark

It Costs Just
$5.00
to Own This Distinctive
Tycos Thermometer



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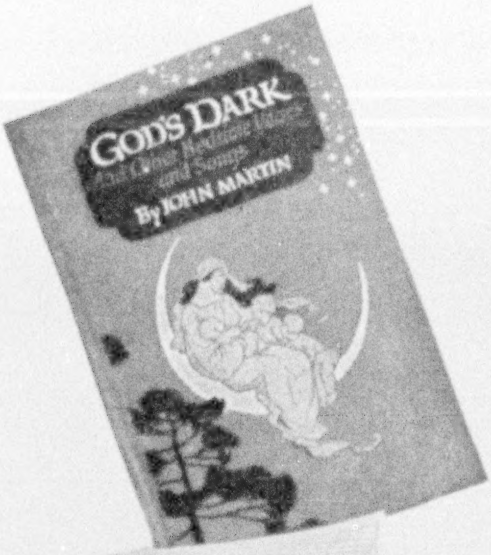

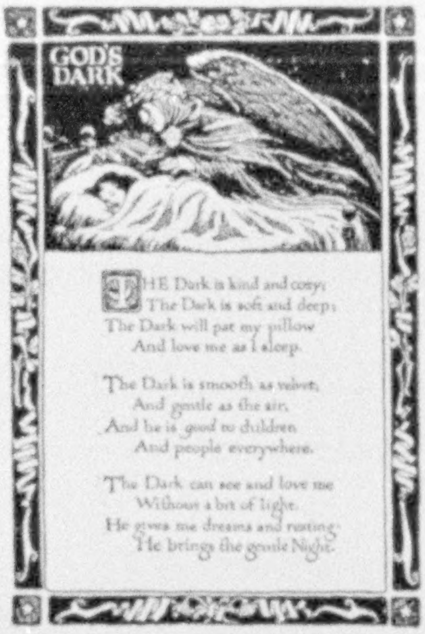
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And love me as I sleep.

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And he is *good* to children
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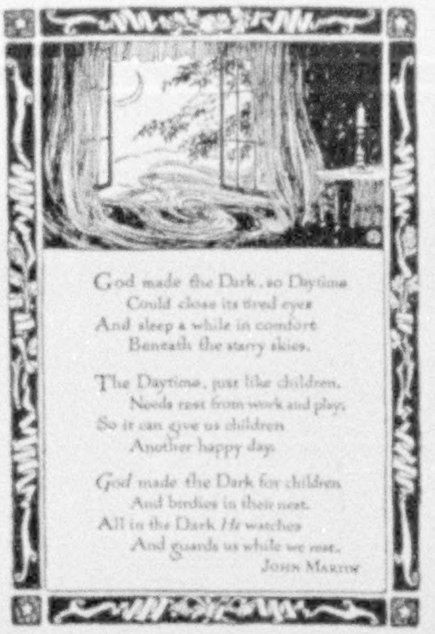
Without a bit of light.
He gives me dreams and resting;
He brings the gentle Night.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Could close its tired eyes
And sleep a while in comfort
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The Daytime, just like children,
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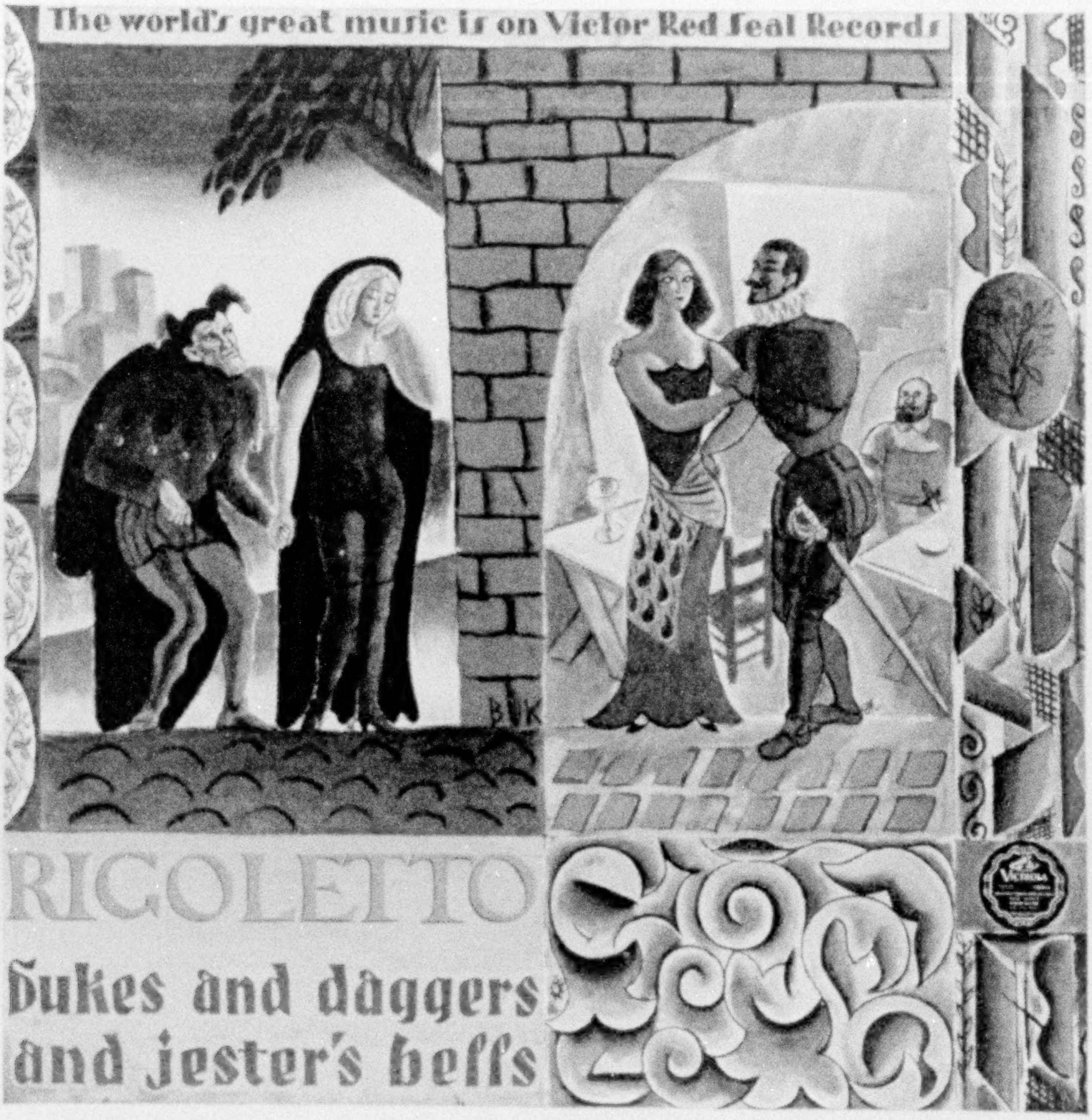
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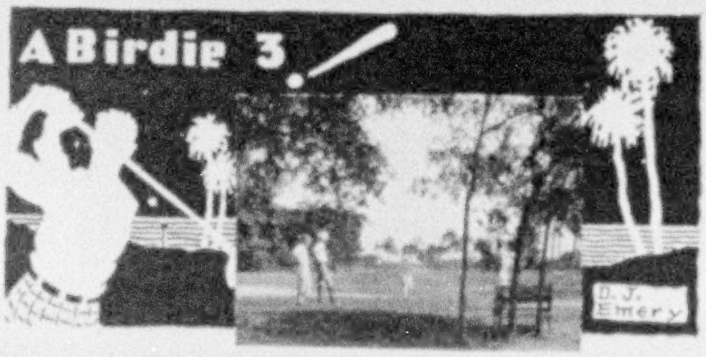

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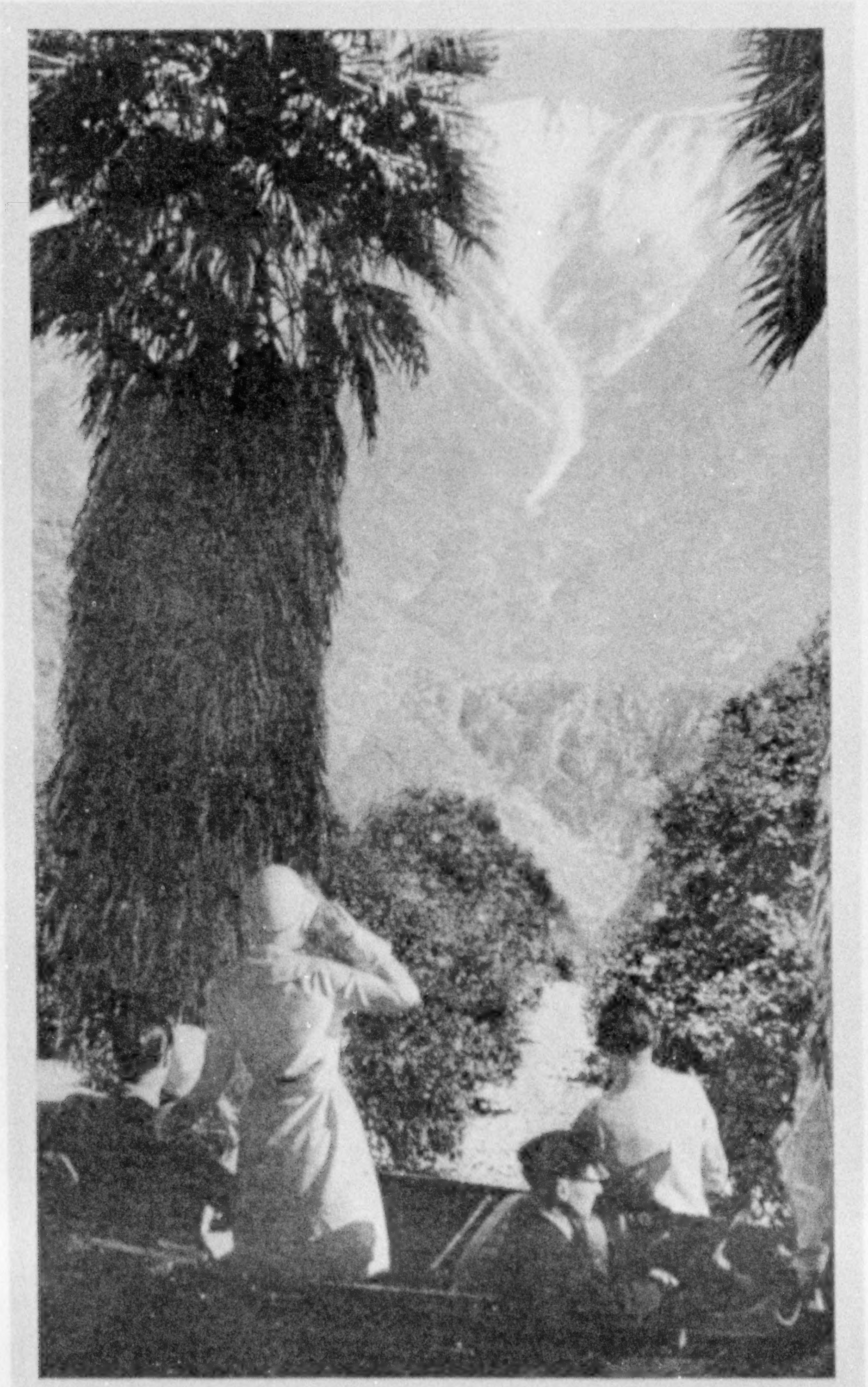

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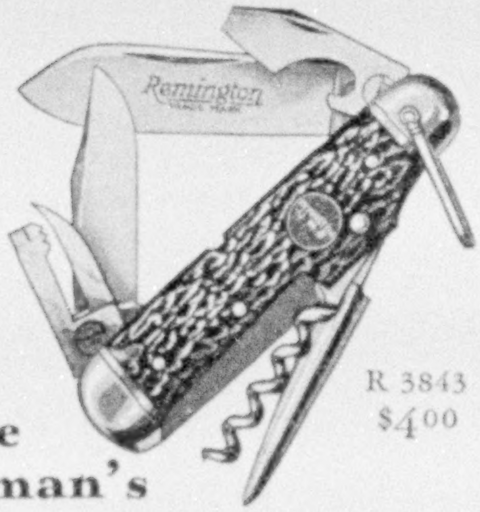

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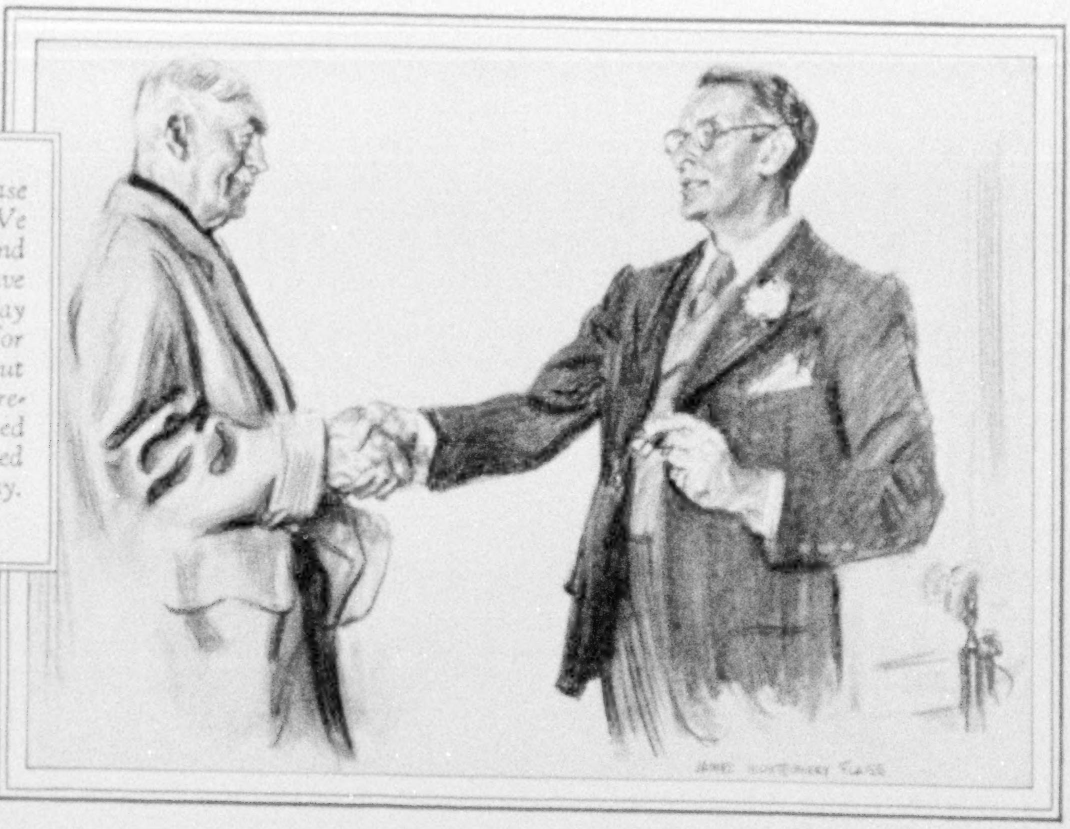

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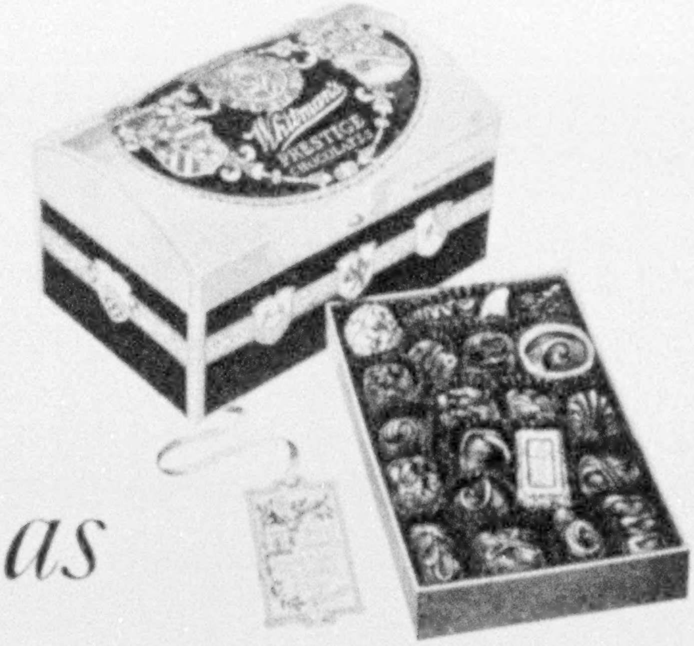

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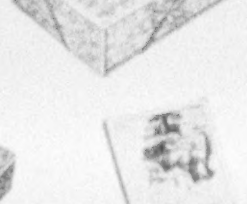

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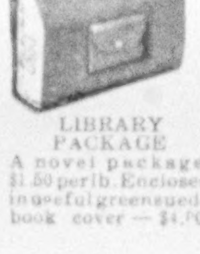

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RENASCENT GERMANY

BY LINCOLN EYRE

Members of the National Geographic Society will find in Mr. Lincoln Eyre's presentation of reconstructed Germany a dispassionate analysis and a present-day picture of conditions recorded by a trained observer. It is a source of deep regret and a loss to his profession that a few days after the completion of his manuscript, this brilliant young resident correspondent of the New York Times in Germany died in Berlin following an operation.—EDITOR.

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Christian civilization never afforded a more absorbing spectacle.

In some ways, Germany has changed completely. In other respects, not at all.

The tourist's casual eye records different uniforms on soldiers and policemen, and fewer of them than in the Imperial era. On holidays a new flag, with three stripes of black, red, and gold—the much-disputed standard of the Republic—flies over public buildings. Yet the old black, white, and red colors are also much in evidence.

Even the Imperial and royal palaces are intact all over the country. Their ousted occupants could move back into them without discomfort at a few hours' notice. This was strikingly demonstrated when the King of Afghanistan was housed in an erstwhile Hohenzollern residence during a recent state visit to the German capital.

In her economic life—in the rise and spread of powerful industries—her transitions have been truly astounding.

No less interesting, and equally significant, have been the changes in her social formation. These changes involve not only a marked decline in the political influence of the old aristocracy, but a singular change in the habits of life and thought among the middle class and the workers.

Let us look, first, and see how the advent of a Republic, set up after the Kaiser fled to Holland, has affected the behavior of the German masses.

"VERBOTEN" STILL COMMANDS OBEDIENCE

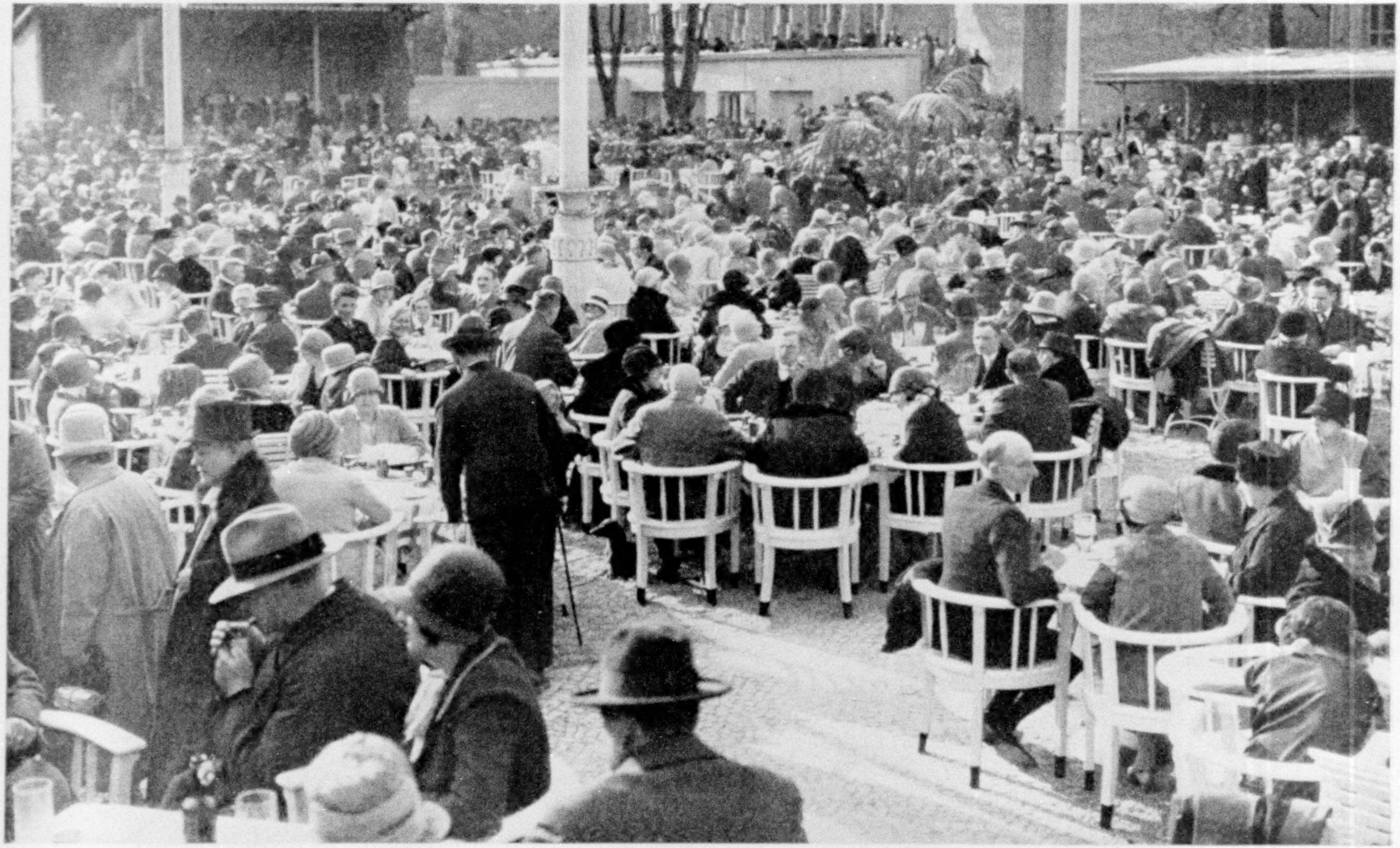
In their meekness to the powers that be, the German people have not changed. The word "Verboten" is as potent as ever. A policeman in the plain uniform of the Republic inspires quite as much awe among compatriots as ever the spiked-helmet guardians of the Kaiser's peace.

As for the army, or Reichswehr, it is absolutely venerated. Toward it the people's attitude seems justified. The military strength of New Germany is not the theme

Photograph by Wide World

MODERN GERMANY LIFTS UP ITS FACE TO A NEW DESTINY

A new flag, a new form of government, and a new social order have come to pass. The pomp and splendor of empire are gone. School children of Oldenburg greet President von Hindenburg on his visit there.

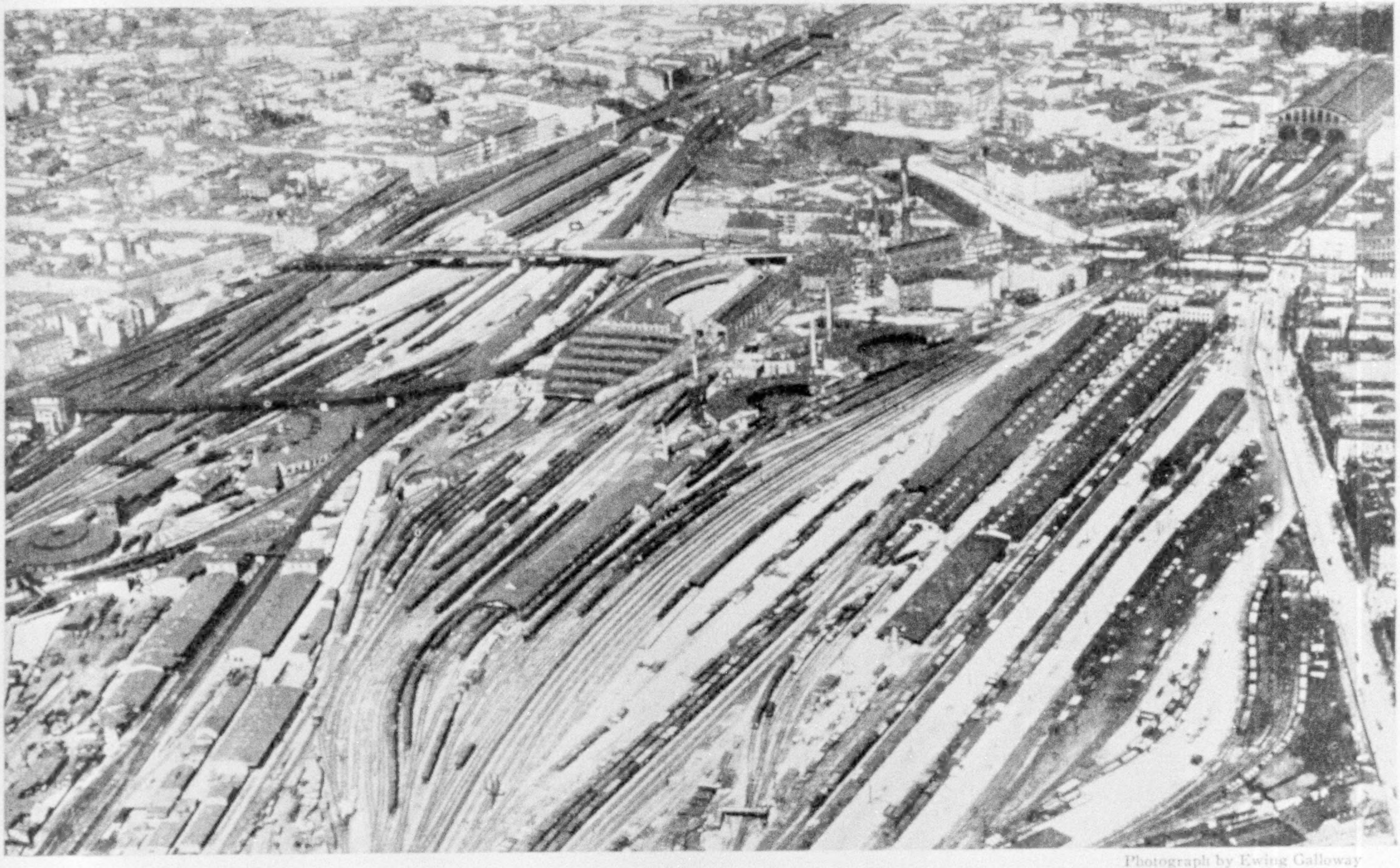


Photograph by Ewing Galloway

SITTING IN THE OPEN, LISTENING TO MUSIC, IS STILL GERMANY'S PRINCIPAL AMUSEMENT

A Sunday crowd at Kroll Garden, in Berlin. This is one of the largest outdoor cafés in all Europe, and its band music is unsurpassed.

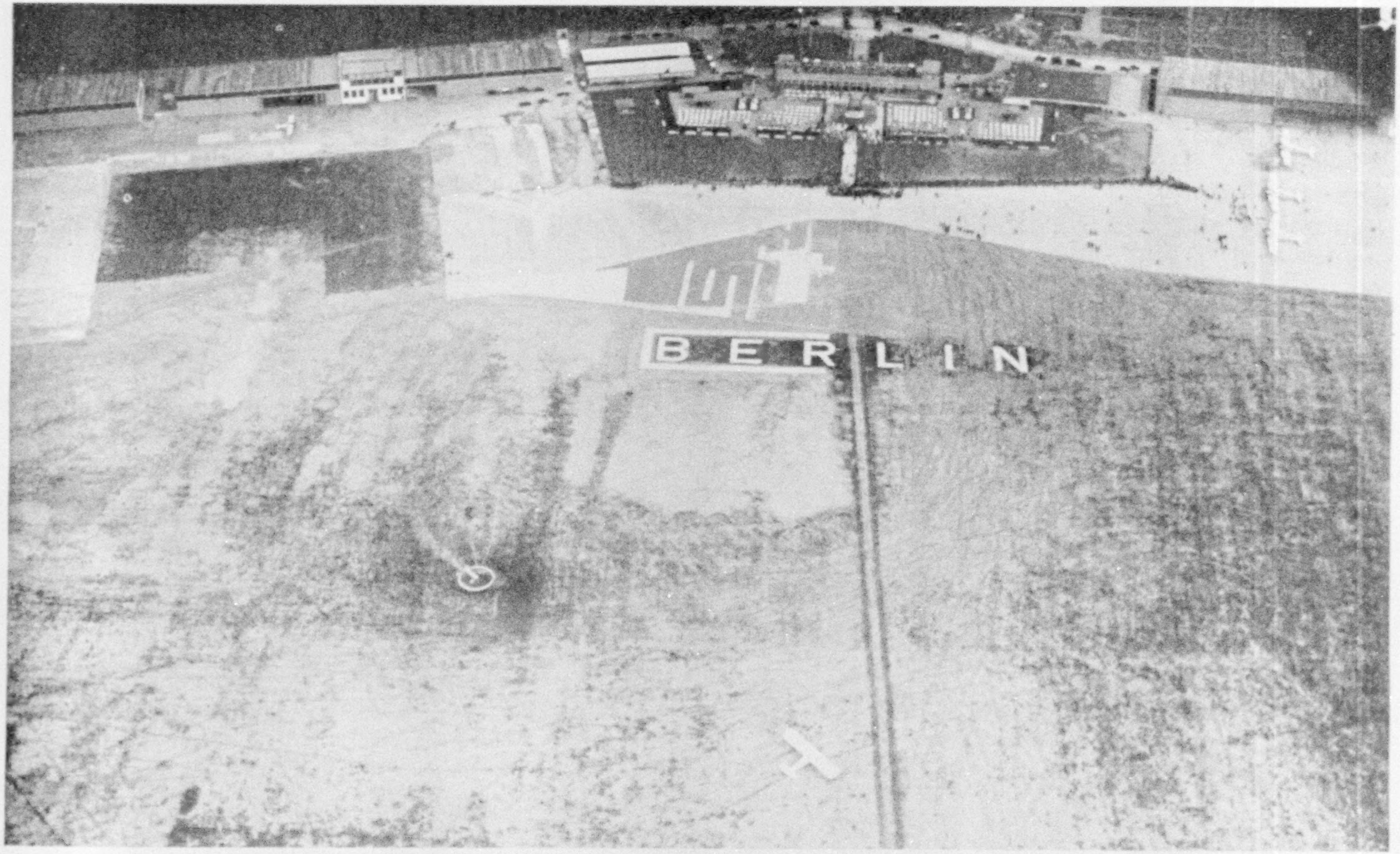
XUM



Photograph by Ewing Galloway

BIG, BUSY BERLIN, LIKE ST. LOUIS OR CHICAGO, ROARS DAY AND NIGHT WITH NEVER-ENDING TRAFFIC

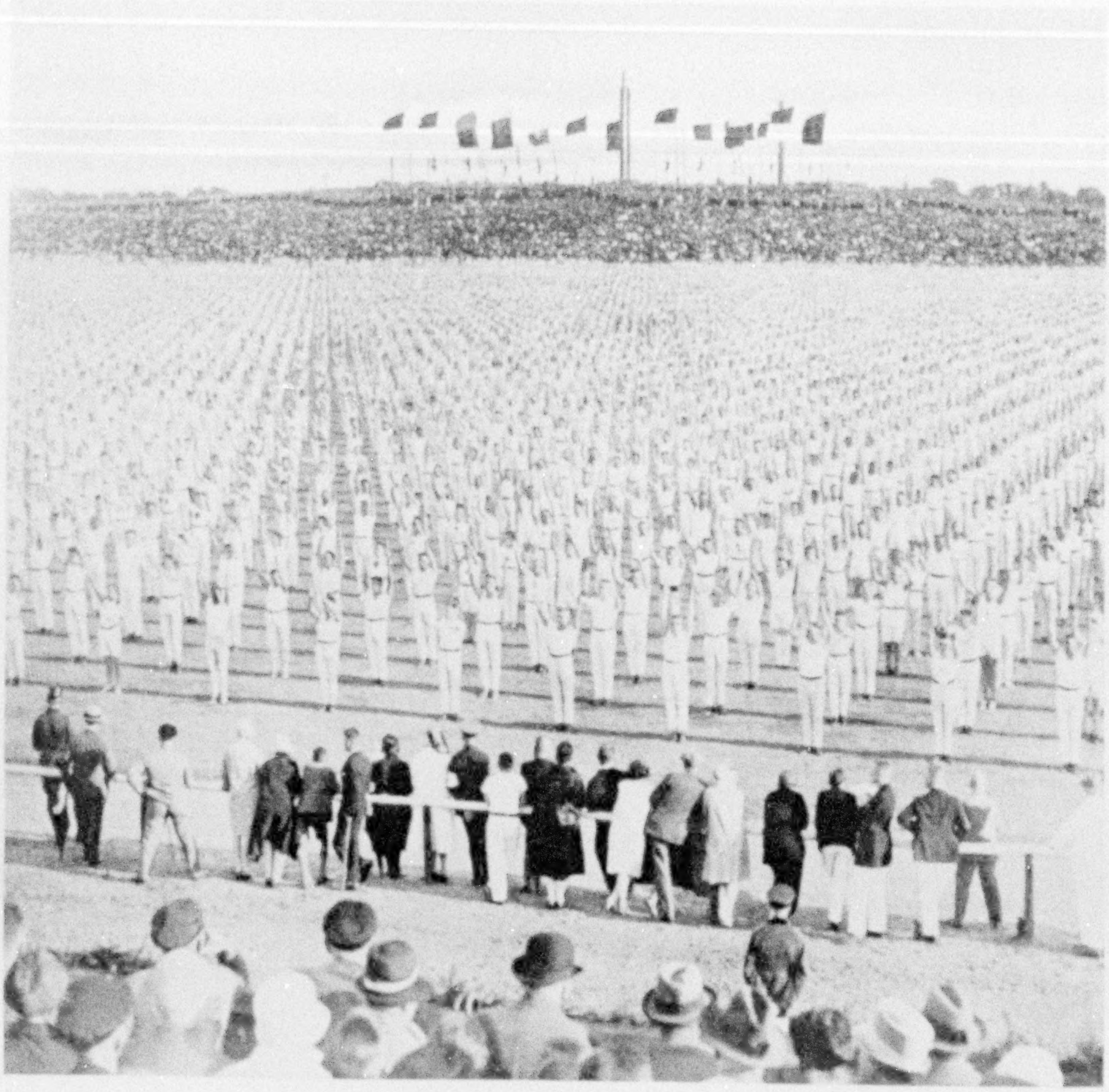
As in a giant spider web, Berlin sits at the center of that vast railway net which covers all Germany, links her with all Europe, and even ties her to distant Asia (see text, page 691).



Photograph by Wide World

SYSTEMATIC GOVERNMENT AID HAS REARED A HUGE AIR COMMERCE IN GERMANY

Now a veritable network of air lines links the big cities of Germany and ties the Republic to surrounding countries. Berlin's great airport at Tempelhof Field, the Kaiser's former parade ground, with its hangars, offices, workshops, and restaurants, has become a busy spot in the city's life (see text, page 693). Planes come and go on schedule, like through trains at a union station.



Photograph by Wide World

UP FROM WAR'S WASTE AND WOE RISES A NEW AND STALWART GENERATION

To a singular degree outdoor sport and physical development have seized the mind of modern Germany. Infinitely more now than in pre-war days, youth takes to athletics (see text, page 646). A turnfest at Cologne.

of this article. But—it may be briefly said—while the small army is not conspicuous, its place in the German cosmos must be fully understood, to understand the new Republic itself.

This small force is built on the remnants of the old army. Under the Versailles Treaty its members enlist for a minimum of twelve years. Airplanes, tanks, heavy artillery, and gas are forbidden to the German army by the Allies.

A general staff also is barred. Yet, in the opinion of the many foreign military experts with whom the writer has discussed the subject, the German Republic possesses a finer army than the Kaiser had, and one which in the efficiency of its training, discipline, and equipment has no superior anywhere.

Its regiments do not march along Unter den Linden, Berlin's most fashionable thoroughfare, nor do they parade for imperial edification on Tempelhof Field. In city streets the uniform is rare, and no unit stronger than a battalion is ever seen.

Yet the German people know that somewhere their troops are hard at work, preparing for that day when, unless Europe ceases to be an armed camp, the present force will become the backbone of a far larger one; will be transformed, as General Hans von Seeckt, its first com-

Photograph by Wide World

WHERE PLUMPNESS AND PULCHRITUDE KEEP STEP

Distinction in athletics is an ambition of every German youth. Tens of thousands of young women go in for outdoor sports. Berlin high-school girls in track costume.

mander-in-chief, once observed, into "an army of commanders." That, in German eyes, is the momentous significance of the Reichswehr.

THE POMP AND PAGEANTRY OF EMPIRE ARE MISSING

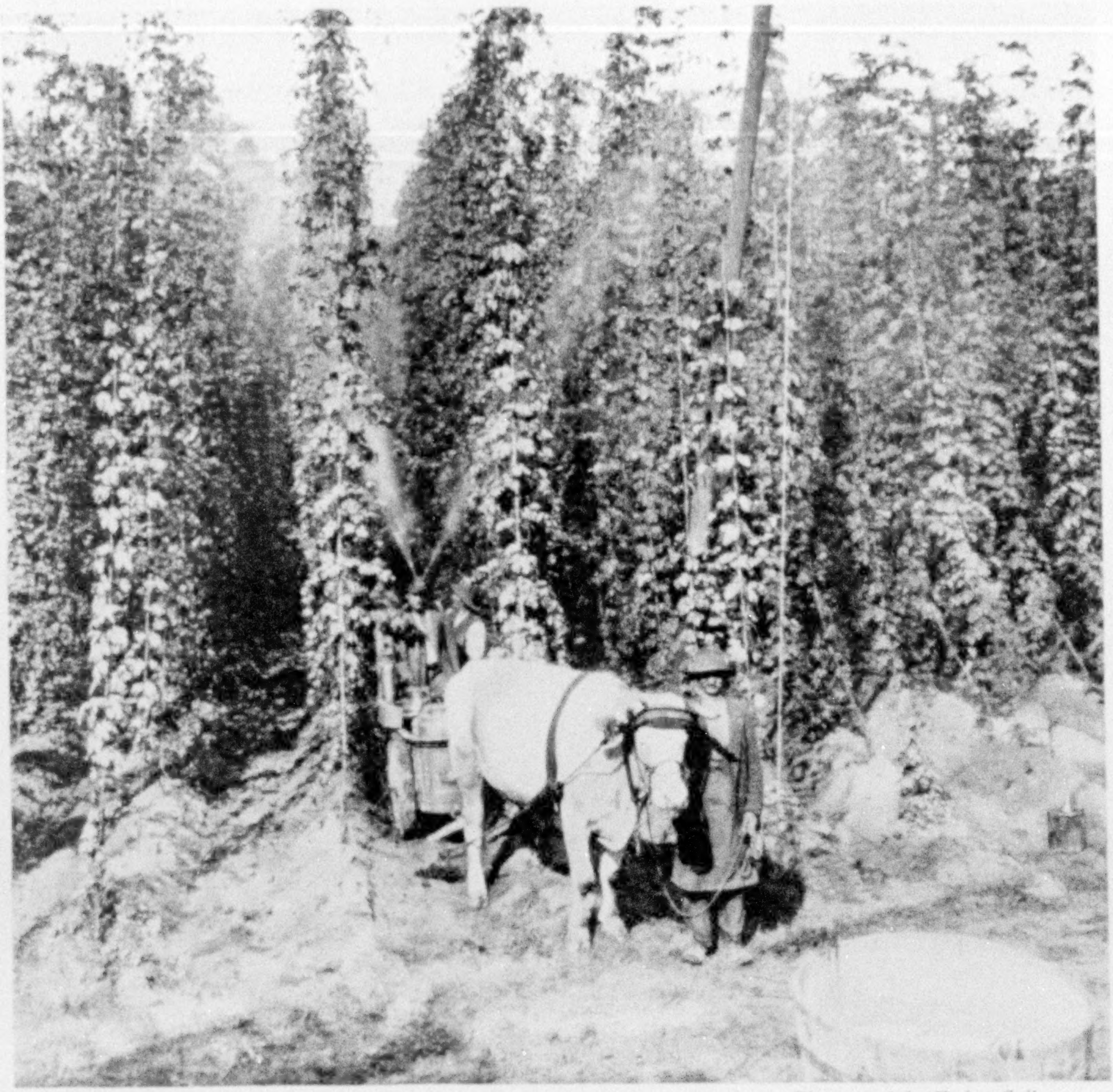
The absence of soldiery in the background of the modern German scene is outstanding among the visible changes wrought by post-war progress. It is the first invariably noted by tourists familiar with the old Germany—sometimes, be it added, with expressions of regret at the loss of "color" resultant from the disappearance of the brilliant raiment sported by the Imperial warriors. For the same reason, these veteran sight-seers bemoan in Berlin the passing of that glittering pageant formerly provided when William II clattered pompously along the capital's streets.

The Republic, like most democracies, has nothing to offer the tourist gaze comparable to the splendor of Imperial spectacles. Even when President von Hindenburg recently received the Afghan King, only the dazzling uniforms of the monarch and his suite and a few score yards of bunting relieved the drabness of Reichswehr uniforms and frock coats of republicanism.

A REVOLUTIONARY CHANGE IN THE YOUTH OF GERMANY

A traveler visiting Germany for the first time since the war probably would notice another change, one far more radical and far-reaching than military alterations. That is the profound change in German youth. It is visible, of course, only to observant eyes that retain a clear impression of young German manhood as it was half a generation ago.

In those days the youth of Germany might have been divided broadly into two categories—the student and the soldier. Both were susceptible of subdivision into two types. There was the scholarly student — pale, bent, and spectacled — and there was the korpsstudent, his shaven poll crisscrossed with saber scars and topped with a colored cap, his hours devoted more to dueling and beer-guzzling than to study. The soldier was either a



Photograph by Ewing Galloway

HOPS GROW HIGH IN BAVARIA

Because so much beer is brewed in Germany, hop growers there are prosperous. This Bavarian farmer, near Pörnbach, is spraying his hop vines to kill a pest. His cart, of narrow tread to run between the hop rows, is fitted with a power spray.

plodding conscript, involuntarily serving his three years with the colors, or a slim, swaggering lieutenant, staring superciliously at hoi polloi through a monocle.

To these young pre-war Germans sport, in the modern sense of the word, was a sealed book. A few students and soldiers played tennis, swam, skated, or kicked a football aimlessly around. Lieutenants, if they had the money, rode horseback and hunted a bit. But games, except tennis, were virtually unknown. In the whole country there were only two or three golf courses, patronized almost exclusively by foreigners.

Track and field sports were nonexistent. So was boxing, professional pugilism being prohibited by Imperial decree. The only form of outdoor exercise undertaken by nine-tenths of the Germans between the ages of fifteen and twenty-five was walking--and not much of that. Indoors, and on the barracks drill ground, they went in for calisthenics. Gymnasiums, like those which abounded in America, were few and far between.

THE SPIRIT OF SPORT HAS BEEN BORN

At thirty a pot-belly was a common characteristic in the Fatherland. That is not going to be true of the generation now in its late teens and early twenties; for

Photograph from Ernest Peterffy

TO TRAIN GIRLS AS FARM MANAGERS, THE GERMAN GOVERNMENT ESTABLISHED AGRICULTURAL SCHOOLS

Loss of the war set all Germany to work. With dignity and persistence, nobles toiled beside peasants. In this group at the farm school in Miesbach, Bavaria, three young ladies of title march to work, garden tools in hand. At one time more than half the students at these agricultural schools were the daughters of once wealthy families, or of high officials and army officers.

the spirit of sport has entered into German youth and physical culture has found a place alongside the "kultur" of book-learning. It is that which has caused so profound a transformation in the young men of Germany. They are satisfied no longer with the kind of exercise supplied by drilling or dueling or turnvereins.

They have plunged with the neophyte's flaming enthusiasm into every kind of athletic enterprise and competition known to the Olympic Games Committee, and in the 1928 international contests at Amsterdam the athletes of Germany tied with those of Sweden for fourth place in men's track and field events and took third place in the women's events.

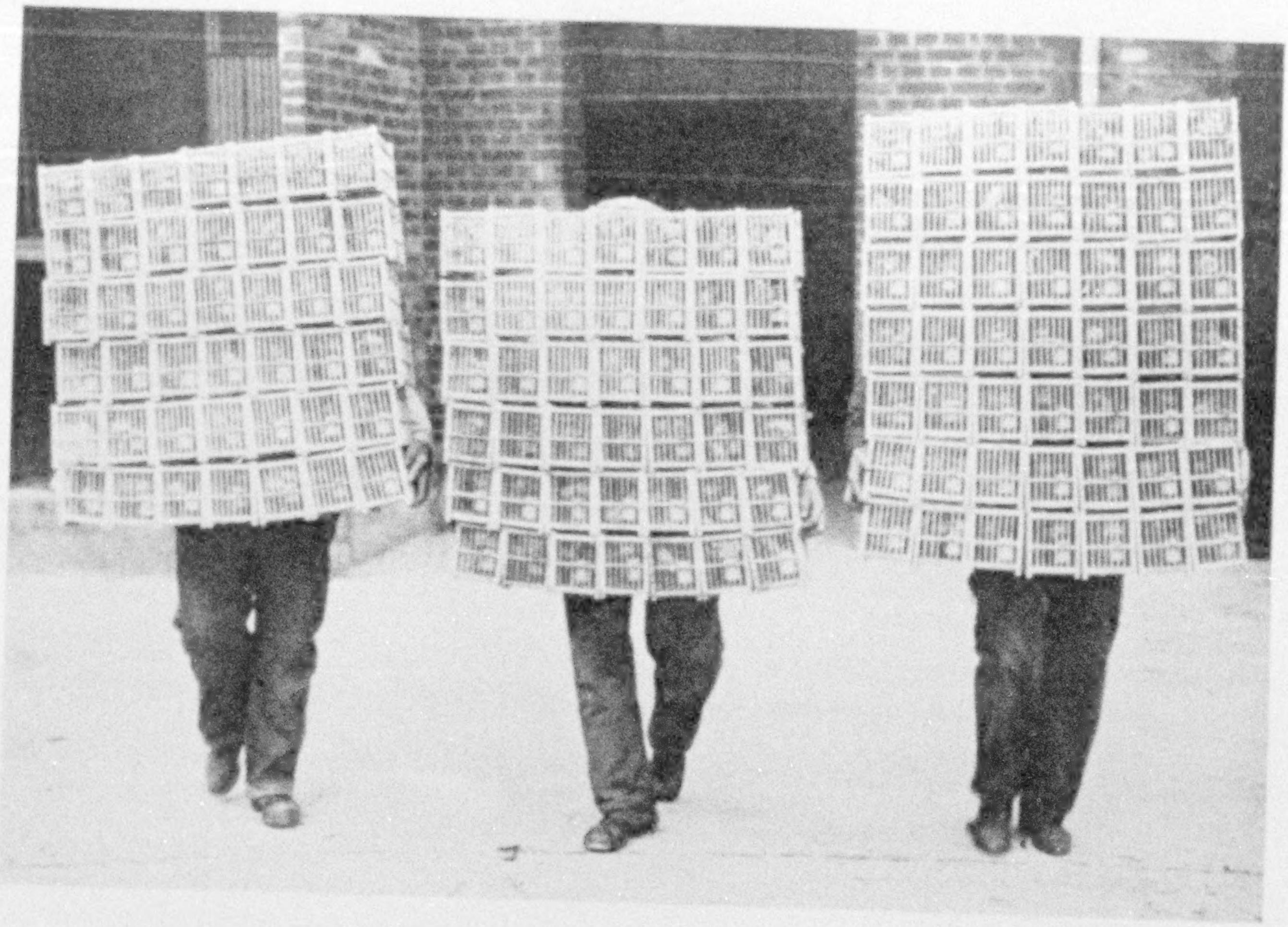
ATHLETIC FIELDS AND GOLF COURSES MULTIPLY RAPIDLY

There are throughout Germany to-day running tracks, football fields, and boxing rings galore. The golf courses are multiplying fast.

In many sports the Germans are beginning to excel. Dr. Otto Peltzer, their foremost runner, is an international star. Every German boy learns boxing nowadays. In Berlin 20,000 persons, among them the former Crown Prince, gather to applaud prize fights.

There are still stooped students, scholastic duelists, dull soldiers, and monocled lieutenants in Germany. Their number, however, is insignificant compared to that of the clear-eyed, lean young athletes who are improving their bodies while by no means neglecting their minds. German education assuredly is on as high a level as ever, but to its intellectual it has added a physical side.

A goodly proportion of German youth belong to semimilitary societies, most of which have strong political leanings. These organizations give their members the training of a soldier, teaching them how to handle a rifle and taking them out on miniature maneuvers or long hikes. For political purposes they stage parades and rallies in the big cities. Often the ad-



Photograph by Ewing Galloway

AMERICA BUYS BOATLOADS OF CANARY BIRDS FROM GERMANY EACH YEAR

Three men are carrying stacks of tiny wooden cages, in which the birds are shipped from the Harz Mountains. "Birdmen" attend the canaries on the voyage from Bremen to New York, one man to every 2,500 songsters.

herents of one society exchange blows, and sometimes shots, with those of another antagonistic faction. The leaders are mostly former officers, ardent militarists all.

But among the rank and file, militarism, in the old Prussian sense, appears to be on the wane. Athletics beyond a doubt are more popular than target practice in the Germany of to-day.

Generally speaking, the youths who dot the German playing fields include the great majority of those formerly doing military service. They also comprise, however, millions more—boys below military age. Only a fraction of them are in school or college. The majority are holding down jobs and devoting only their spare time to sports, particularly Sundays and holidays.

Among the 700,000 present-day young Germans whom the Kaiser would have drafted into his army, only the sons of the well-to-do are not earning their own living or trying to. Some are emigrating, notably to South America, Mexico, and Canada, as well as to the United States, of course. Those that stay home must be absorbed by industry and commerce or join the army of unemployed.

FARM LIFE NO LONGER APPEALS TO GERMAN LABOR

There is virtually no movement toward the land in Germany. Agricultural labor is so badly paid that the farm worker's only ambition is to escape to the city. Crops on the great estates in East Prussia are harvested only with the aid of many thousand Poles, who cross the frontier in the summer months and return home in the fall.

The small landowners and peasants can produce only enough to feed and clothe their own families. Younger sons generally drift to the industrial centers.

Germany's girls are hard on the heels of their male contemporaries in most forms of mental and physical endeavor. In those specially suited to their sex they are fast drawing abreast of the men. In the pursuit of higher education they are

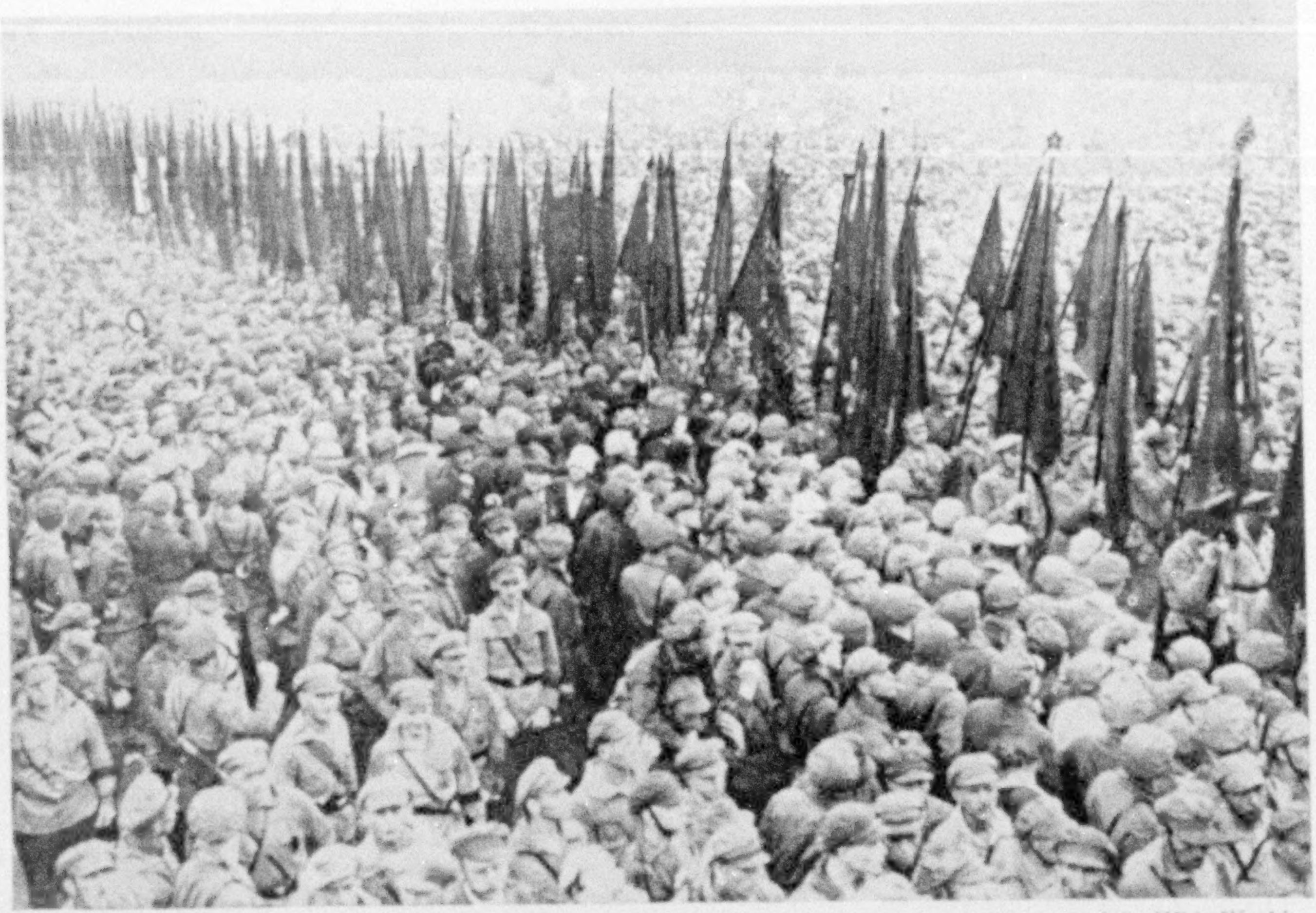
Photograph from Ernest Peterffy

MARY'S LITTLE LAMB IN A GERMAN SETTING

Photograph by Ewing Galloway

ALWAYS, SOME WORK THAT OTHERS MAY PLAY

German toys cover the civilized world. Their manufacture and distribution give work to thousands. Each year competition among makers of mechanical toys—the strife to produce the season's best seller—becomes an event of tense dramatic interest to the international toy trade.



Photograph by Wide World

A POLITICAL PARTY HOLDS A DEMONSTRATION IN SCHILLER PARK, BERLIN

Just as all kinds of political thought and innumerable theories of government are freely advanced before Sunday gatherings in Hyde Park, London, so Schiller Park, in the German capital, is an open forum. Here 100,000 adherents of a political party are parading.

quite as energetic as their brothers. They confidently contemplate making their own way in virtually every profession, craft, and trade and deliberately train for a specific goal.

THE PRESENT-DAY FRÄULEIN IS FOND OF ATHLETICS

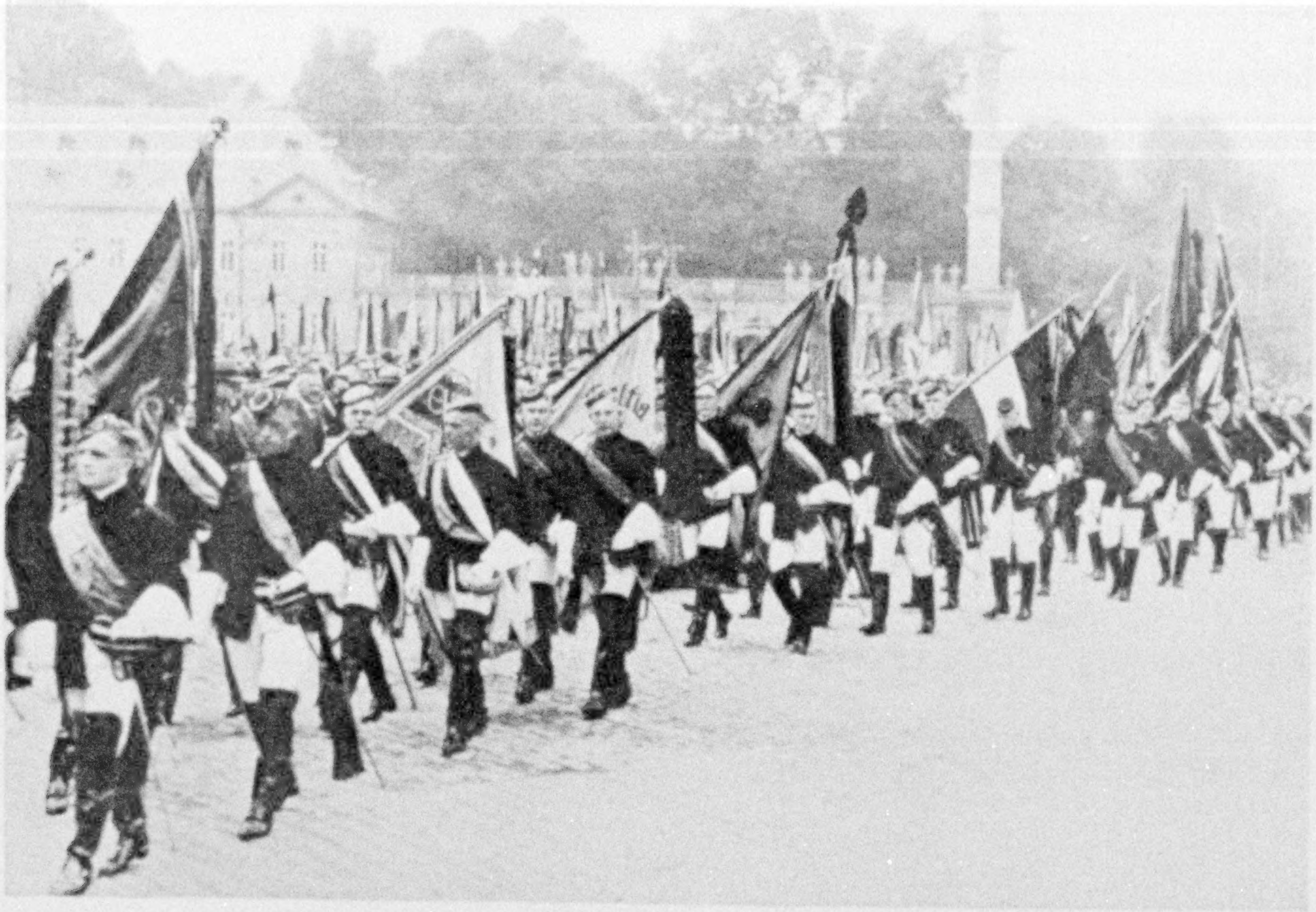
And while the German flapper's hair and skirts are as short and her lips as cosmetically carmined as her sister's of Park Avenue or Piccadilly or the Champs-Élysées, she is fonder of sports, perhaps, than is the average damsel in other countries. On field and track, in the water, and even at football and hockey, she vies hotly with the opposite sex. In Berlin last year more than one thousand girls took part in a 20-mile relay race from Potsdam to the capital, in which some 5,000 masculine contestants also were entered.

At least three daughters of Germania are internationally eminent for their sporting achievements. At twenty-two Thea Rasche, of Essen, is the foremost woman stunt flyer of Europe, if not of the world. Clairenore Stinnes, youngest daughter of Hugo Stinnes, Sr., in his day Germany's richest citizen, runs a racing car better than any of her female compatriots. As this was written, she was motoring through China on a globe-circling tour. In the tennis realm, Cologne has produced a pretender to the crowns of Helen Wills and Señorita Lili de Álvarez in the person of a sixteen-year-old fräulein, Cilly Aussem by name.

German womanhood long since has rejected the last Kaiser's edict limiting the fair sex to the four K's—Kinder, Kleider, Kirche, Küche (children, clothes, church, kitchen). The whole alphabet is embraced by women's range of activity under the Republic.

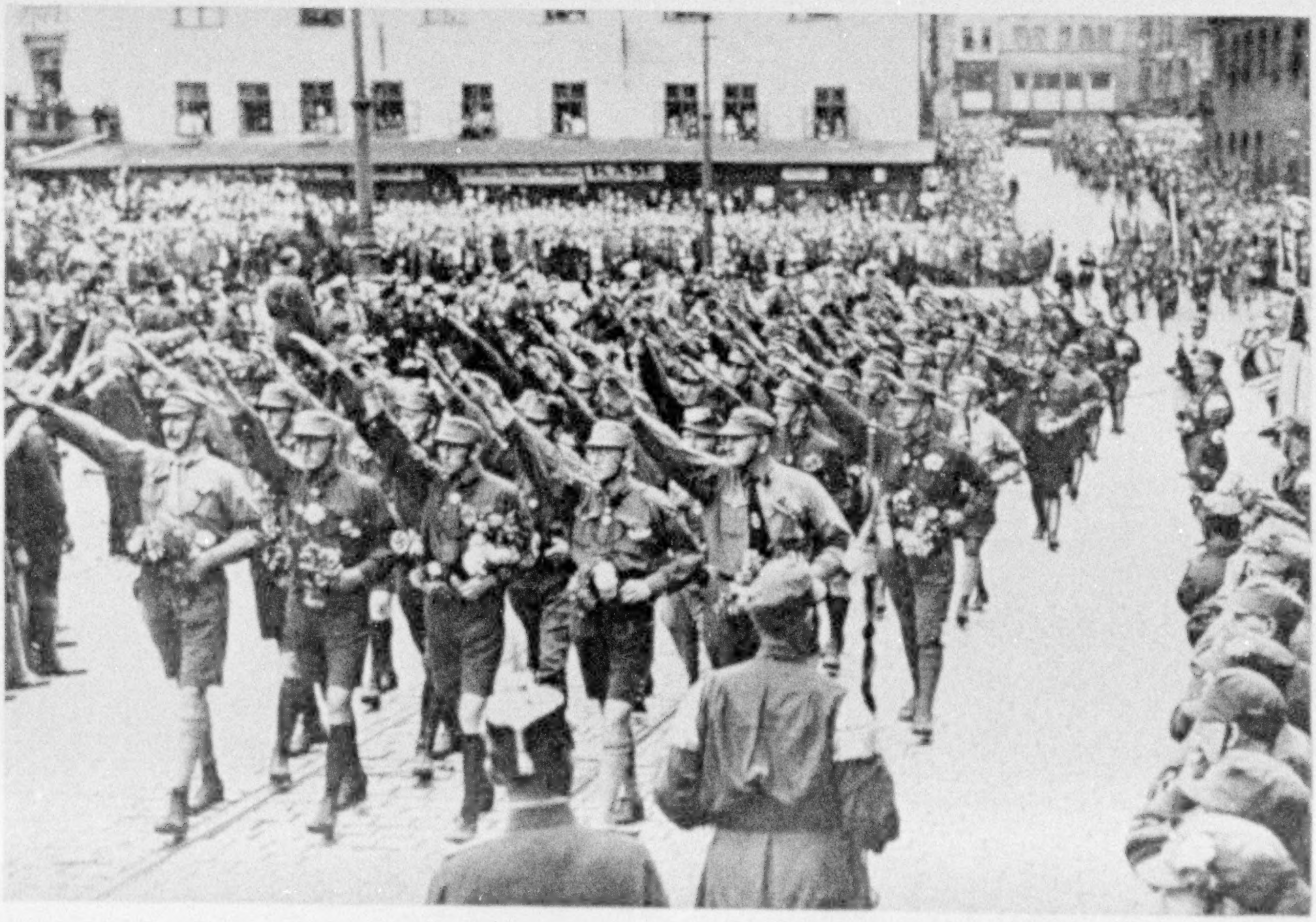
WOMEN ARE ACTIVE IN POLITICS AND PROFESSIONS

In the national legislature every important party has women representatives, who specialize in matters affecting the welfare of mothers and children, but who are also



ORGANIZED UNIVERSITY STUDENTS PARADE IN UNIFORM

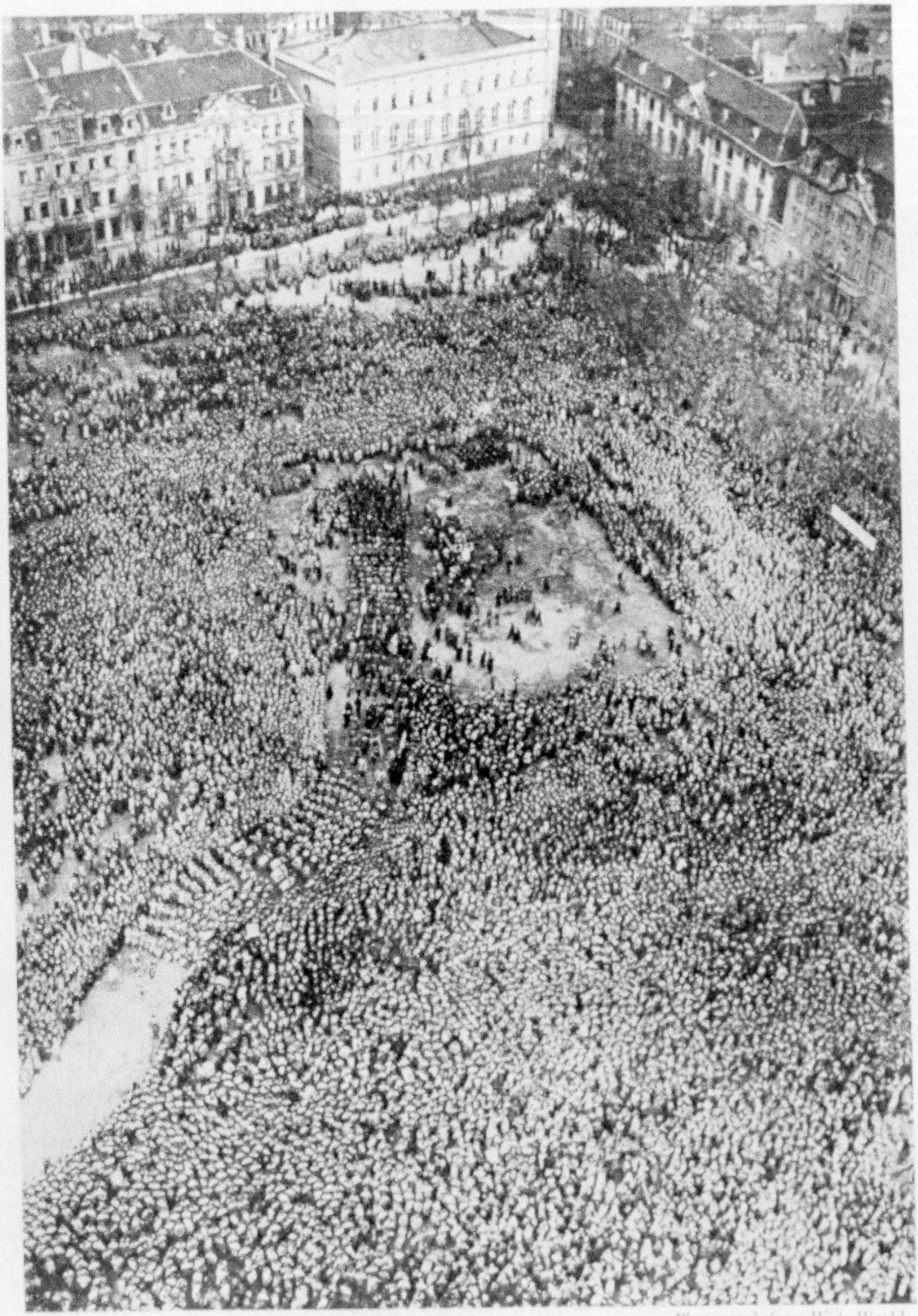
In the First National Convention of German University Students thousands of young men met at Würzburg. Each delegation wore its own university uniform.



Photographs by Wide World

MEMBERS OF THE NATIONAL SOCIALIST PARTY PARADE AT NUREMBERG

The streets of the old Franconian city are redolent of a magnificent past, when Nuremberg was a leader in commerce, art, and learning. Here Albrecht Dürer was born and a galaxy of less illustrious sons also contributed to her supremacy in the artistic handicrafts.



Photograph from Wide World

ONE HUNDRED THOUSAND ADHERENTS OF THE REPUBLIC, MASSED IN CATHEDRAL SQUARE AT MAGDEBURG, CHEER FOR A CLOSER UNION WITH AUSTRIA

Only a few scattered bits of the old city of Magdeburg escaped destruction in the fire and sack which followed its resistance to Tilly's armies in the Thirty Years' War. The new city is an important sugar-refining center.

Photograph by Wide World

IN ITS EVENTFUL HISTORY, WILHELMSTRASSE HAS ECHOED TO MANY A MARCHING CROWD

People of Berlin throng before the palace of President von Hindenburg to pay him honor on his birthday.

active in all public affairs. Some of them, notably the spirited and eloquent Baroness Katinka von Oheimb, have achieved nation-wide fame and are in line for ministerial portfolios. Considering that German women have been enfranchised only since the passage of the Weimar Constitution in 1919, this transition is amazing.

The legal, medical, and literary professions are full of skirted practitioners. Such women writers as Ida Boy-Ed and Frau Thea von Harbou, author of the novel on which the motion picture "Metropolis" is based, are celebrities abroad as well as at home.

The modern Germania has invaded even the most conservative of German institutions, the bench and the pulpit. Recently the first female pastor was ordained in the Lutheran Church, and there are several women judges. Berlin and other German municipalities boast of their policewomen.

In the old Germany this expansion of woman's sphere, so sensational in its rapidity and scope, could scarcely have been dreamed of. Nothing short of the World War and the social and political shake-up that followed it in Germany could have accomplished so complete and sudden an emancipation of the sex.

GERMAN WOMAN'S REALM STILL THE HOME

On the rising generation its influence has just begun to be felt, and it is certain to work far greater transformations. And, while thus far mature German womanhood has sent only an advance guard into the front line of humanity's endless battle, every middle-aged hausfrau in the placid seclusion of her kitchen and nursery senses the significance of this phenomenon and is thrilled by the thought of it and of what it will mean to her daughters.

Yet its present effect on German life on the whole is inconsiderable. Finding a husband continues to be the principal occupation of Germany's young women, and keeping house for their husbands and children the main business of Germany's wives.

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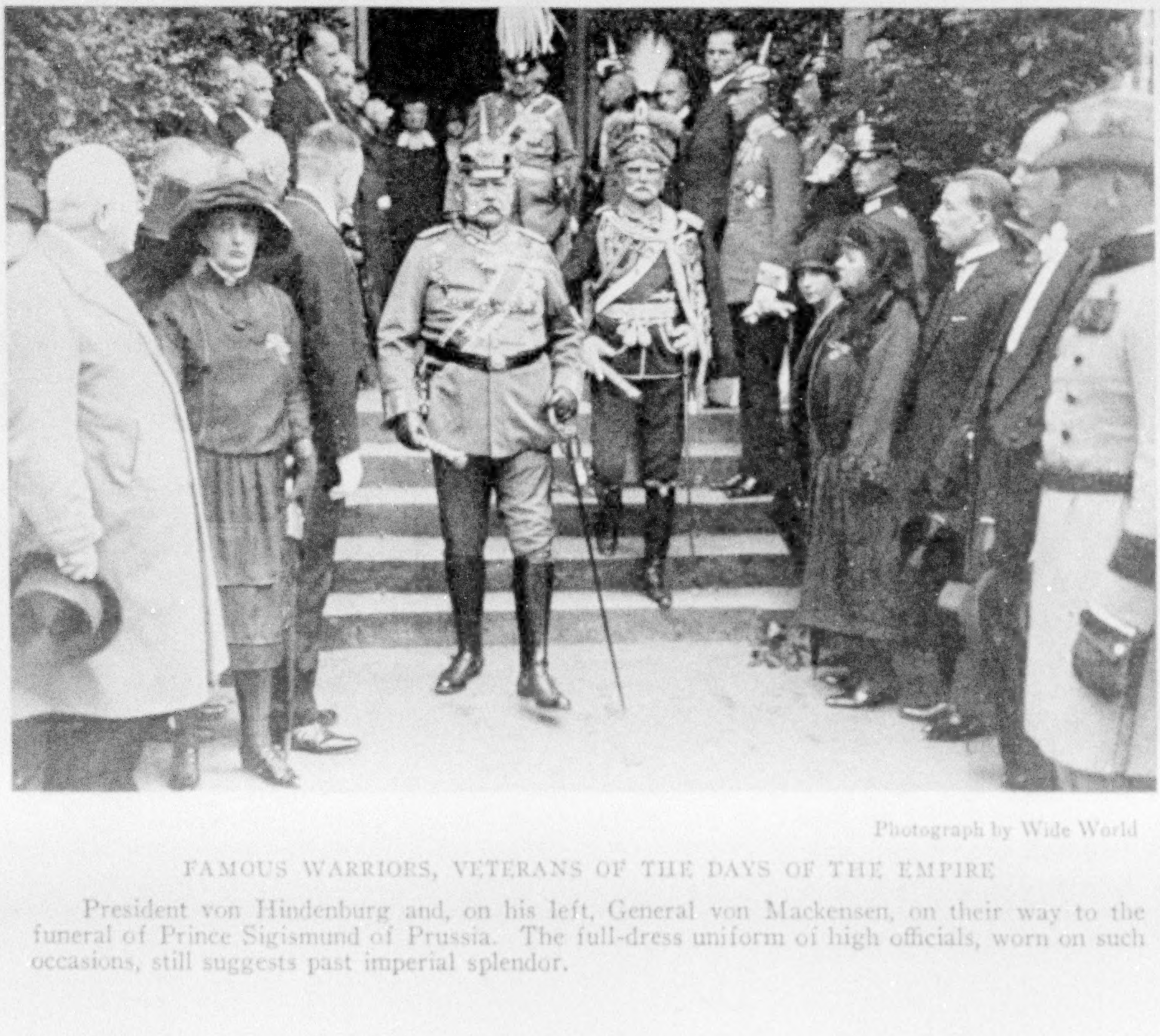
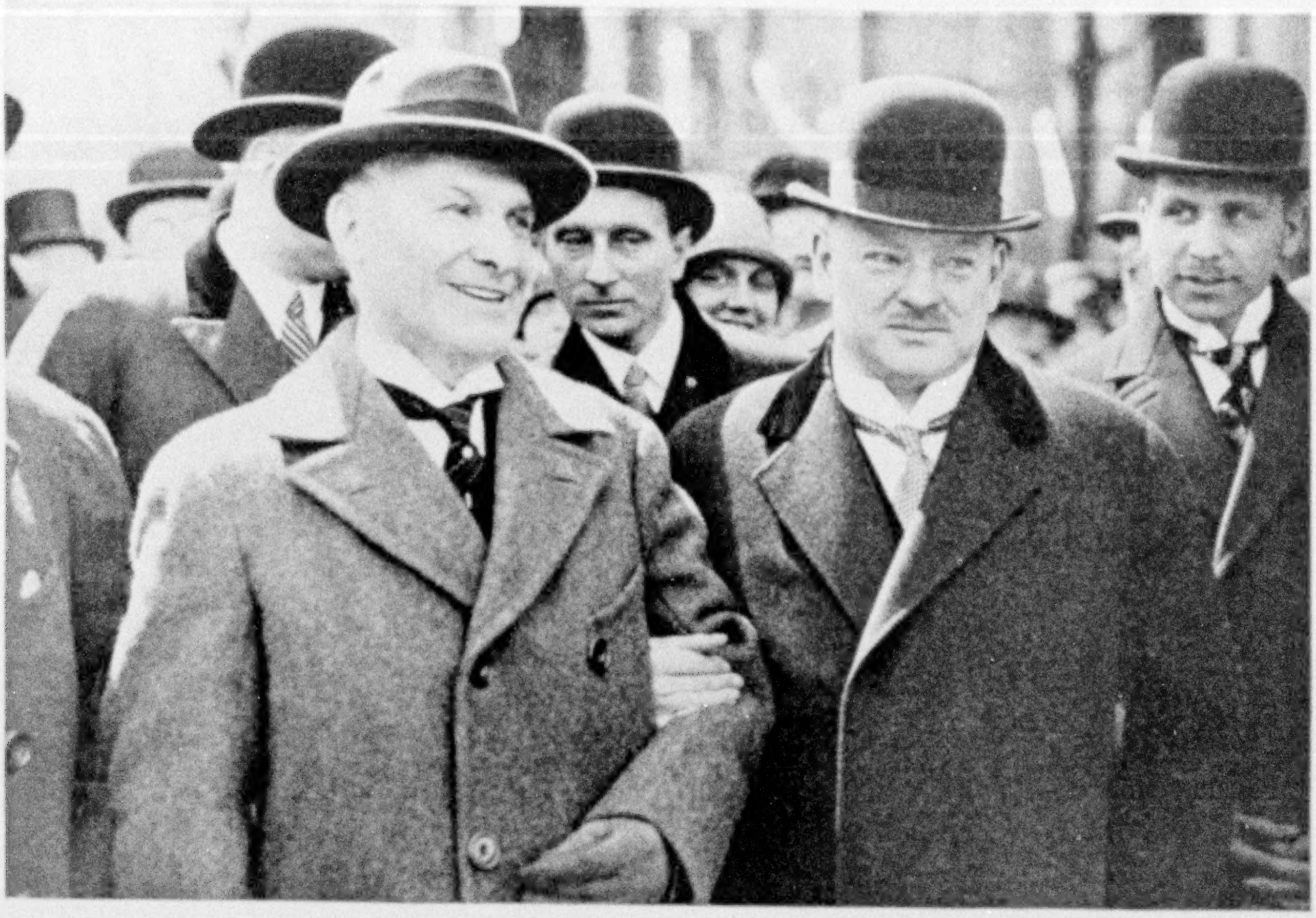
GREEN AS GOSLINGS NOW, BUT PRACTICE MAKES THE GOOSE STEP PERFECT



Photograph by Wide World

FAMOUS WARRIORS, VETERANS OF THE DAYS OF THE EMPIRE

President von Hindenburg and, on his left, General von Mackensen, on their way to the funeral of Prince Sigismund of Prussia. The full-dress uniform of high officials, worn on such occasions, still suggests past imperial splendor.



Photograph by Wide World

THE MAN ON THE LEFT SPEAKS FOR UNCLE SAM AT BERLIN

The American Ambassador to Germany, Dr. Jacob Gould Schurman. On his left is Dr. Gustav Stresemann, the German Minister of Foreign Affairs.

Family customs and habits remain unaltered, save in such minor details as the son's possession of a latchkey and the daughter's freedom to go out dancing unchaperoned. As elsewhere, the more prosperous classes patronize opera and theater, the poorer the movies.

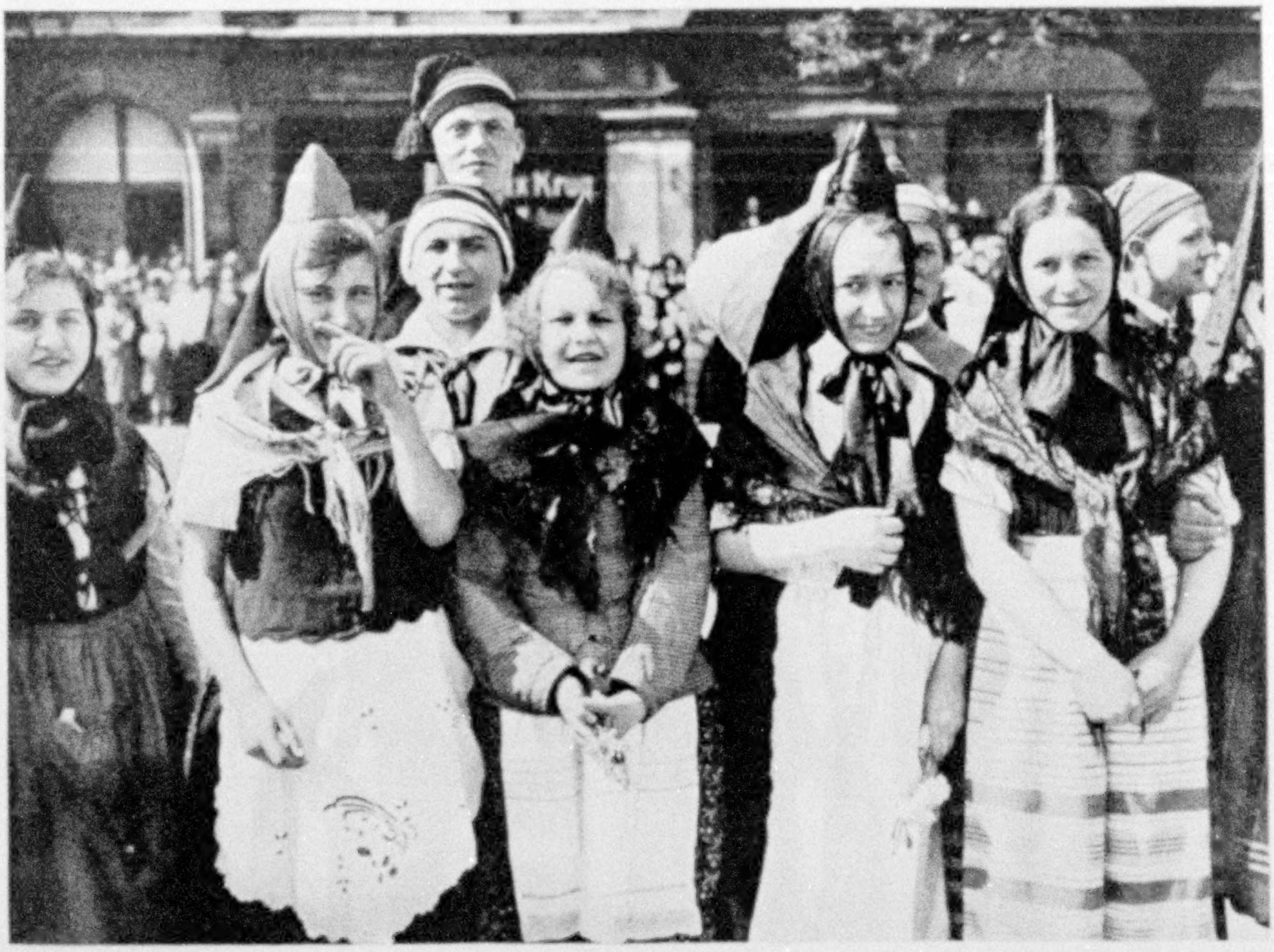
GERMANY'S FAVORITE PASTIME REMAINS UNCHANGED

Sipping beer to music — indoors in winter, outdoors in summer—is still the most popular pastime with nine-tenths of the Reich's population. Just as before the war, father takes the family walking in the park on clear Sundays, and all of them give obedient heed to the "Verboten" signs on the grass.

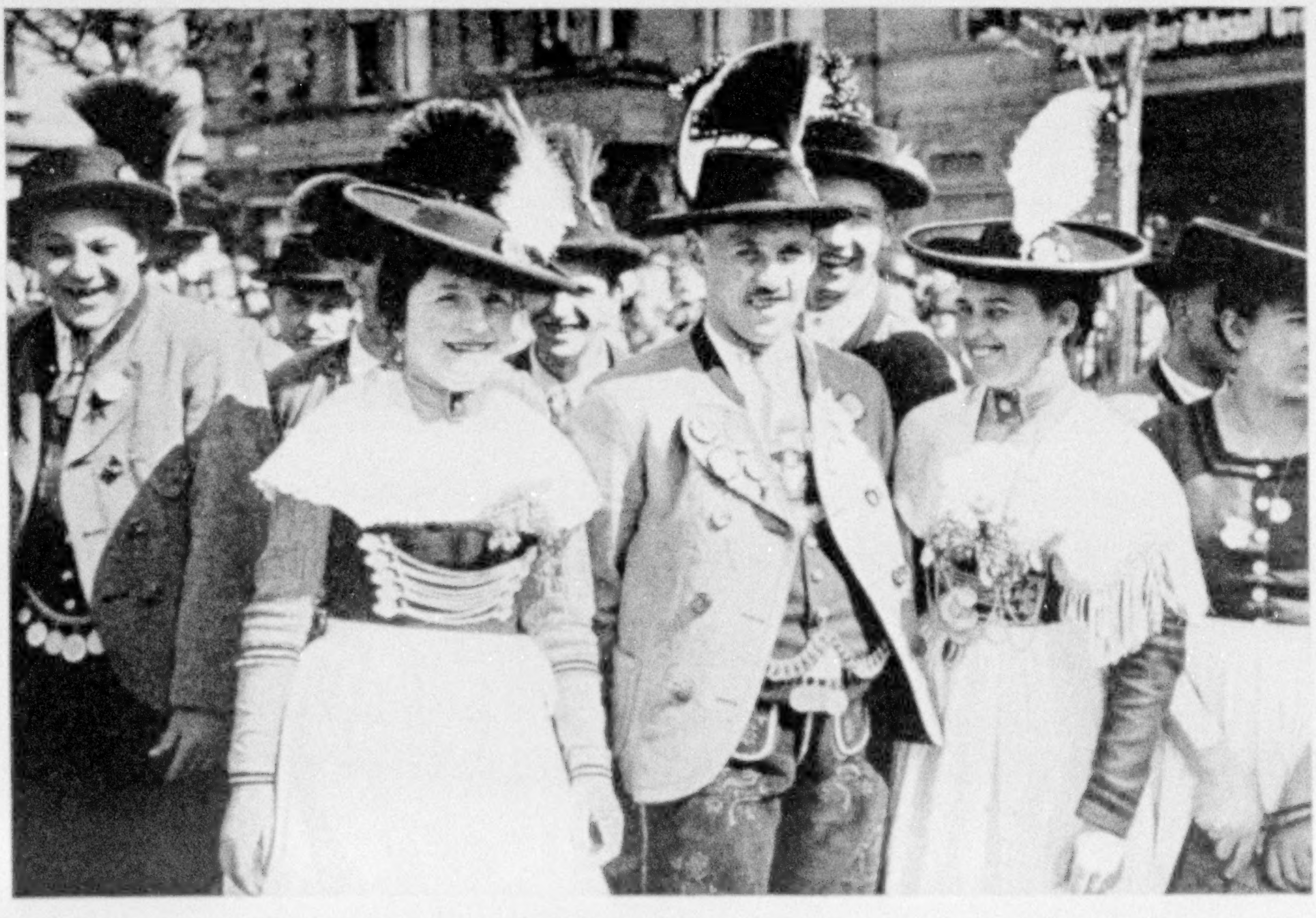
Fashionable society, however, has been turned topsy-turvy by the events of the last decade. Before their revolutionary suppression, the Imperial and royal courts, established in the twenty-two capitals of the Federated States, were the hubs around which Germany's social activities revolved. The beau monde consisted exclusively of persons who were *hoffähig*—that is, privileged to appear at court. They included the nobility, army and navy officers, Cabinet ministers, and a sprinkling of high officials and private individuals whose distinction served them in lieu of a title. Except in the case of wives of Cabinet officers and generals, no untitled woman, however, was admitted to her sovereign's entertainments.

The very categories which composed this court class were those which—when Germany lost the war—were hit hardest financially. They were hit first by the fall of monarchism, which provided agreeable and remunerative employment for a large proportion of them, and second by the fall of the mark; for it was they whose fortunes, almost without exception, were patriotically invested in State securities, the value of which dwindled to nil in step with currency depreciation.

Economically, only the big landed proprietors survived, and most of them, too, saw their incomes shrink substantially. The less wealthy nobles—and few German aristocrats were rich—were reduced to penury. So, too, were the mass of those



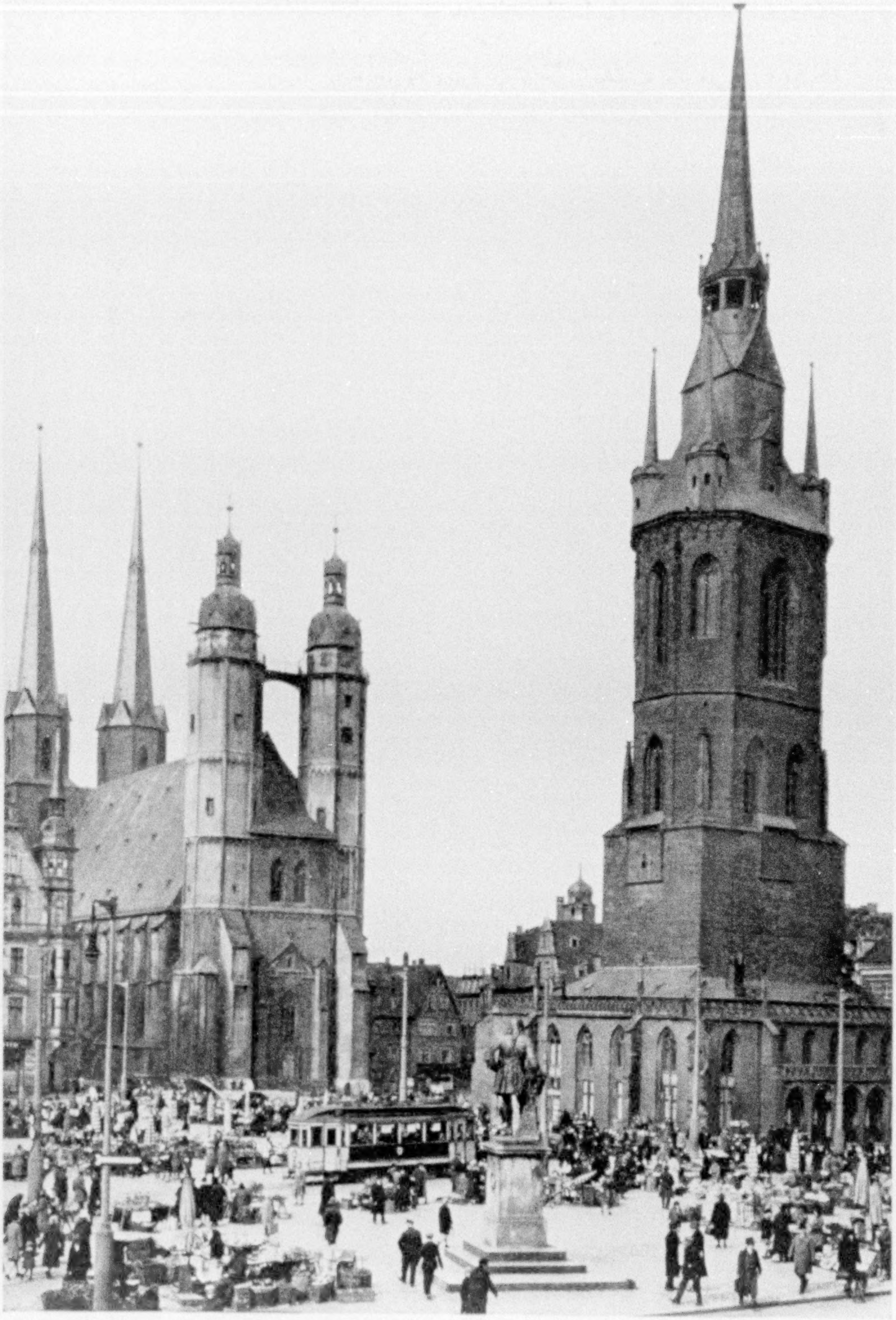
YOUNG GIRLS OF EICHSFELD ATTEND A HALLE FESTIVAL IN PEASANT GARB



Photographs by Wide World

MANY ONCE WELL-KNOWN GERMAN PEASANT COSTUMES ARE DOOMED TO DISAPPEAR

The older generation, which knows how to make them, is passing away, and the younger generation is interested only in more modern styles. These examples from Upper Bavaria were photographed recently at a fair in Halle (see, also, illustration, page 657).



Photograph by Ewing Galloway

HANDEL, WHO COMPOSED THE "MESSIAH," WAS BORN HERE AT HALLE

In the central foreground, facing the public market, stands a monument to the great composer of oratorios. At the right is the Roter Turm, the belfry of a vanished church, and in the background the 16th-century Church of Our Lady. Halle is an industrial city of central Germany.

who had made the Kaiser's land and sea forces their profession.

THE NEWLY RICH DOMINATE "SOCIETY"

For the older generation painful hardships resulted in the years of strikes, business stagnation, and money panics that followed the war. There were innumerable instances of gray-haired courtiers and generals forced to take clerkships and other poorly paid positions, and of aged gentlewomen eking out a bare existence by sewing or menial services. The younger ones fared better, of course. With the asset of the excellent education enjoyed by every upper-class German, they readily obtained good jobs in banks, industrial concerns, or business houses.

Work became synonymous with noblesse oblige. Even a Hohenzollern prince entered the automobile trade and made good selling cars to the nouveaux riches.

These latter came to dominate the so-called society of Berlin and other big cities. Bankers and merchants whose wealth seldom antedates the Republic, and few of whom in old days would have been invited to the Imperial palace, are hosts nowadays to the heads of government, the diplomatic corps, and those of the nobility who accept the new conditions. Of the last named there are enough left with sufficient money to play a social rôle and provide an aristocratic leaven for parvenu entertaining.

A title still signifies much, but no longer is preëminent. The bulk of the aristocracy has withdrawn from the self-anointed fashionable life of the cities and dwells quietly in the country or in small towns. Potsdam, residence of the former Crown Prince and other sons of the Kaiser, has become the headquarters of old nobles whose incomes or inclinations prohibit their participation in the capital's chaotic society. Living is cheap there and monarchistic traditions are faithfully preserved.

GERMANY'S PRESIDENT HAS VERY LIMITED POWER

On a recent visit home a manifestation of American public opinion that impressed me much was the interest shown in President von Hindenburg. Everybody at all curious about conditions in Germany began by asking about Hindenburg—how he was, what he was doing, whether he wasn't the mainstay of his country, and so forth.

Doubtless in many cases these queries were based on a misconception of the status of the German Republic's Chief Magistrate. Many Americans suppose him to have the same powers as our own President.

As a matter of fact, save in cases of national emergency, when he can make himself or anybody else a virtual dictator, the German President, under the Weimar Constitution, has little more authority than a constitutional monarch, like the King of England. The country is really run by the Chancellor and his Cabinet, answerable to the supreme governmental organism, the Reichstag.

Nevertheless, American interest in the venerable Field Marshal, even though erroneously inspired, is fundamentally sound; for Hindenburg is the symbol of the most important process set in motion in the new Germany which has arisen out of war-time defeat and the ruins of the Hohenzollern Empire.

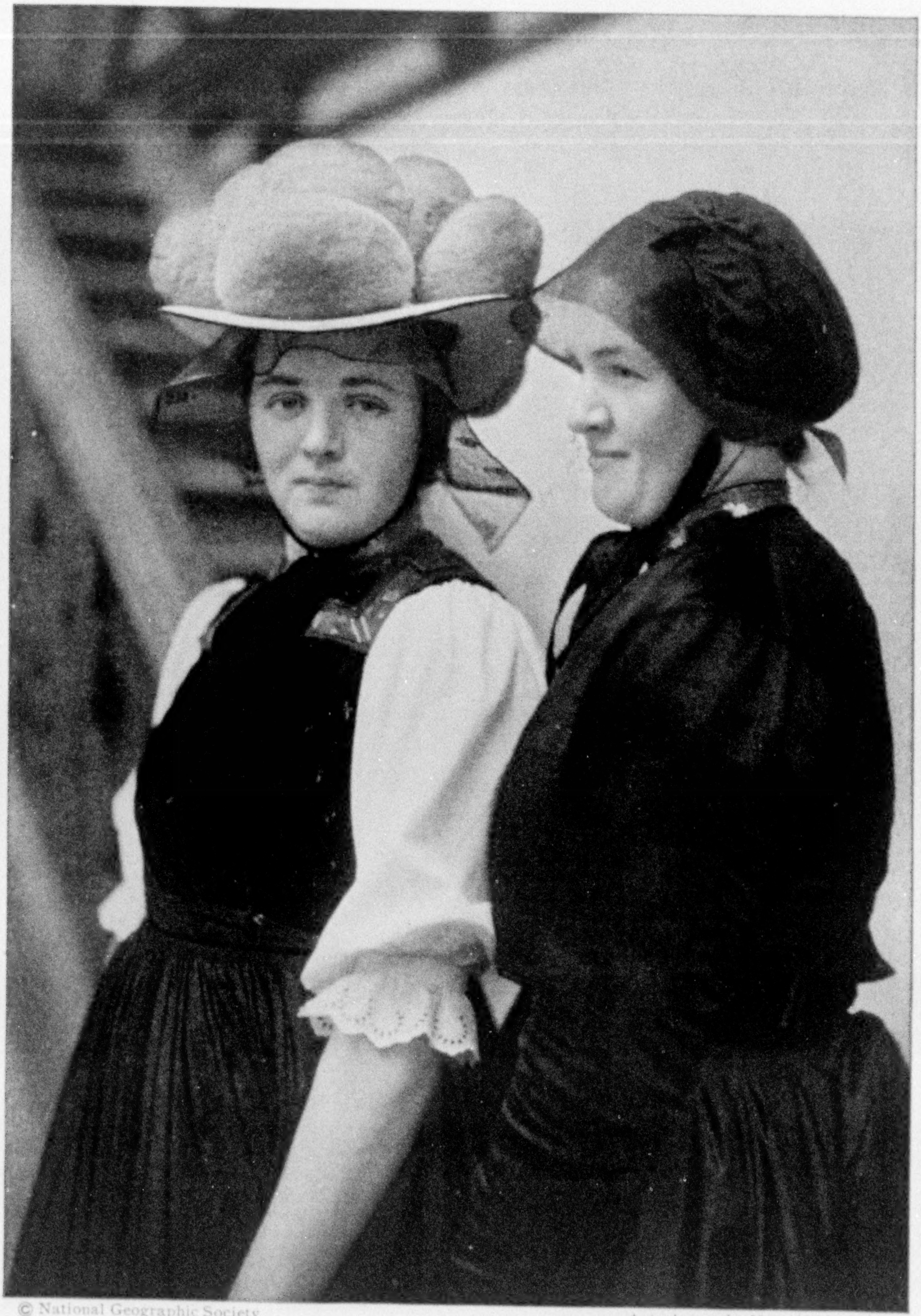
That process is the unification of the German nation.

Hindenburg served the German Empire under three Kaisers. Now, at the age of eighty-one, he serves the German Republic. This erstwhile generalissimo of the Imperial armies sees his Fatherland as a homogeneous whole, and not as a conglomeration of heterogeneous units.

PEACE SETTLEMENT INTENSIFIED GERMANY'S NATIONAL SPIRIT

The Versailles Treaty abolished the right of each separate German state to have its own army, and established one national force. The state railroads were amalgamated into one system under the ægis of the Reich, called the Reichsbahn (see, also, text, page 691). The financial prerogatives of the states were curtailed. They could no longer impose taxes or borrow money at their own discretion.

Moreover, there are now fewer state governments for the general government to deal with. When the armistice revolution tore the Kaiser's crown from his head, it simultaneously toppled twenty-one minor German monarchs—kings, princes, grand dukes, and dukes—off their little thrones. A number of former duchies and principalities merged into a smaller number of republican states. While the Empire comprised twenty-six



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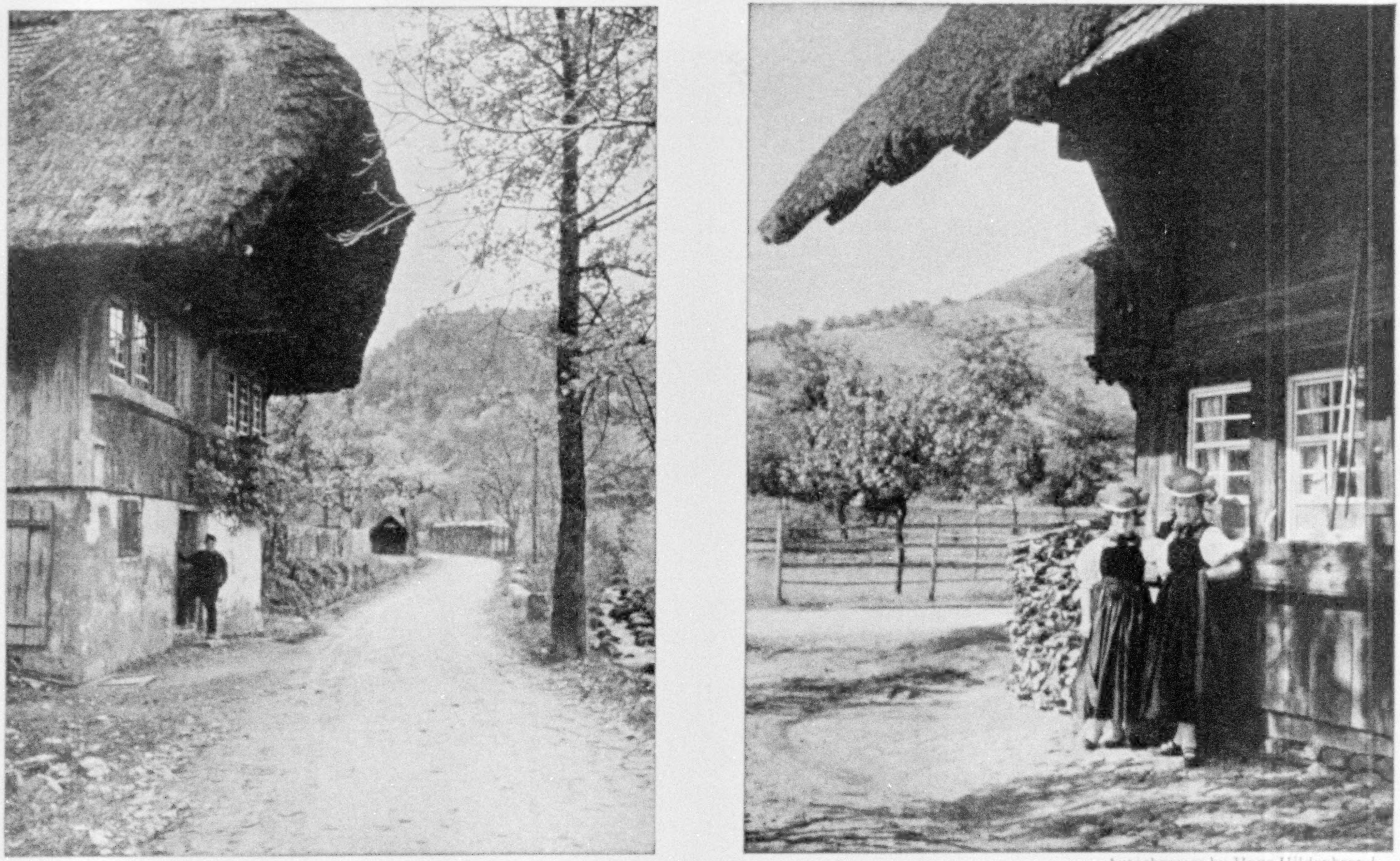
Autochrome by Hans Hildenbrand

WHAT'S BEING WORN IN THE BLACK FOREST THIS SEASON

The big, broad-brimmed straw hat is a model popular with the ladies of Gutach. The velvet pompons denote by their color (red or black) whether the wearer is married or single. Fine, regular features, large eyes, and clear complexions distinguish the young women of this town

XUM



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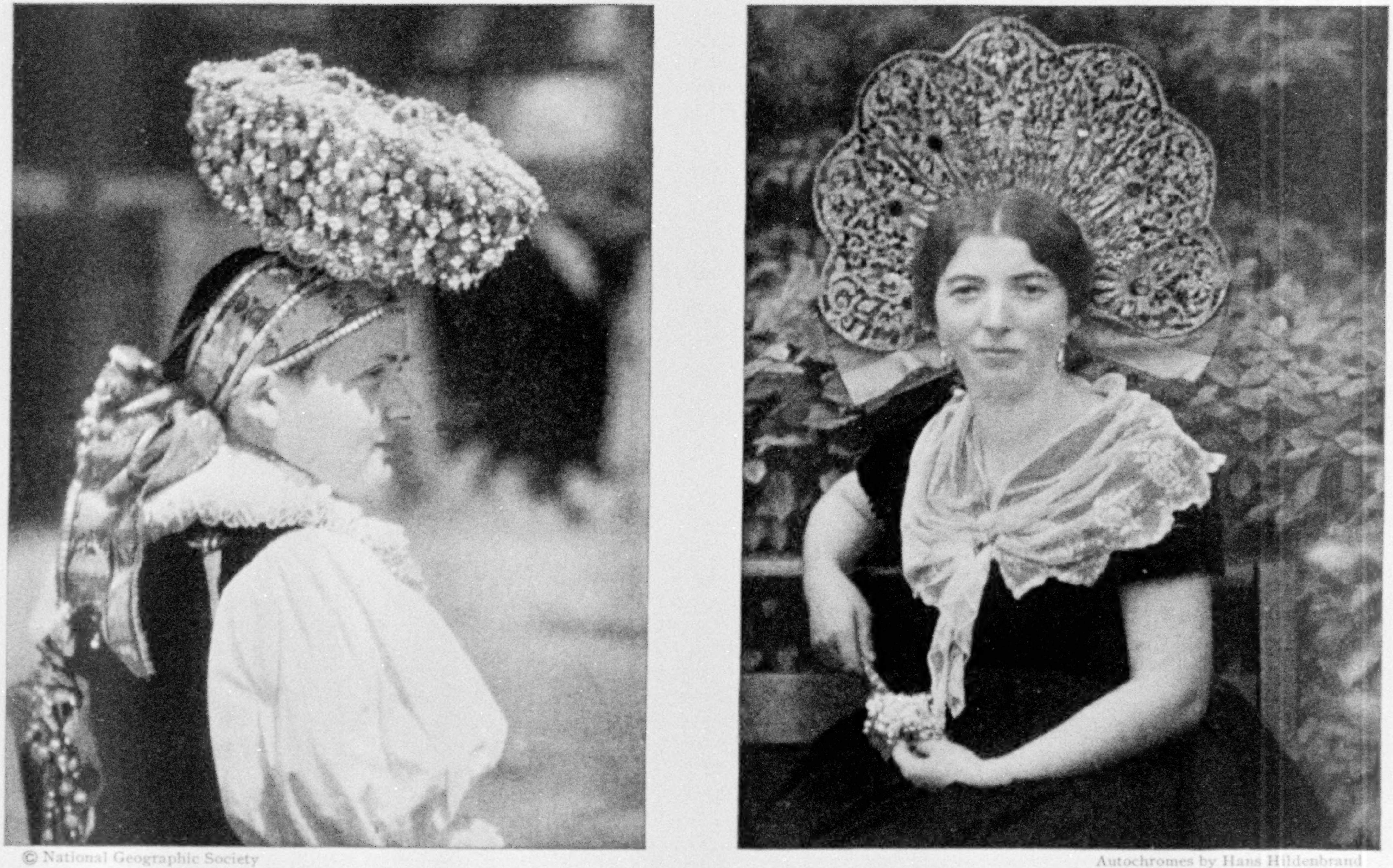
Autochromes by Hans Hildenbrand

ALONG THE BYWAYS OF A REGION WHICH STILL BELIEVES IN GNOMES AND FAIRIES

The strife and poverty that have been the lot of peasants in so many lands are almost unknown in the Black Forest. The combination, through numerous generations, of industry, frugality, and inborn business acumen, with the natural fertility of the soil, has produced a proud and prosperous, but untitled landed aristocracy. At the left is a farmhouse of Kirnbach Valley; at the right, a dwelling of Gutach.



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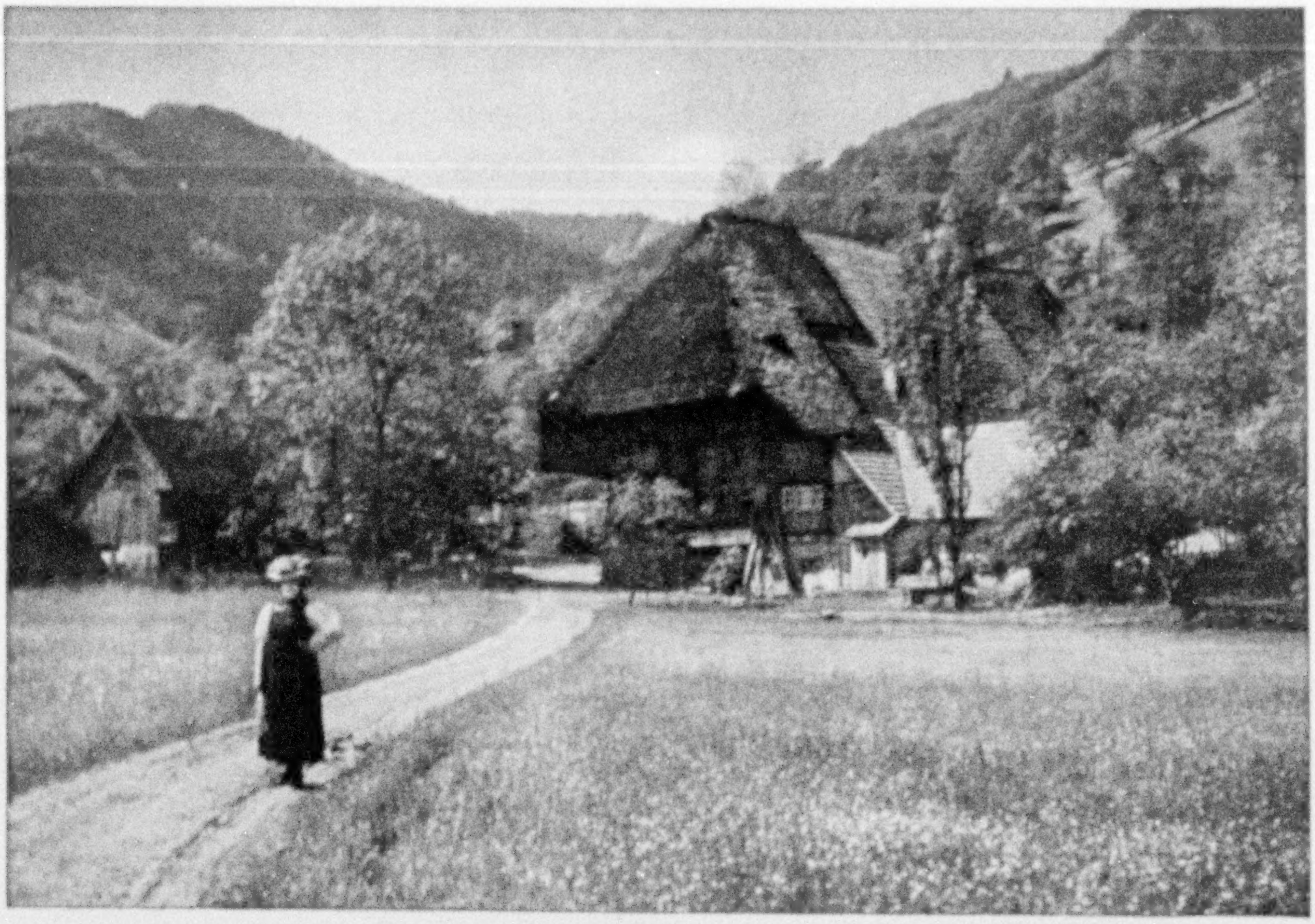
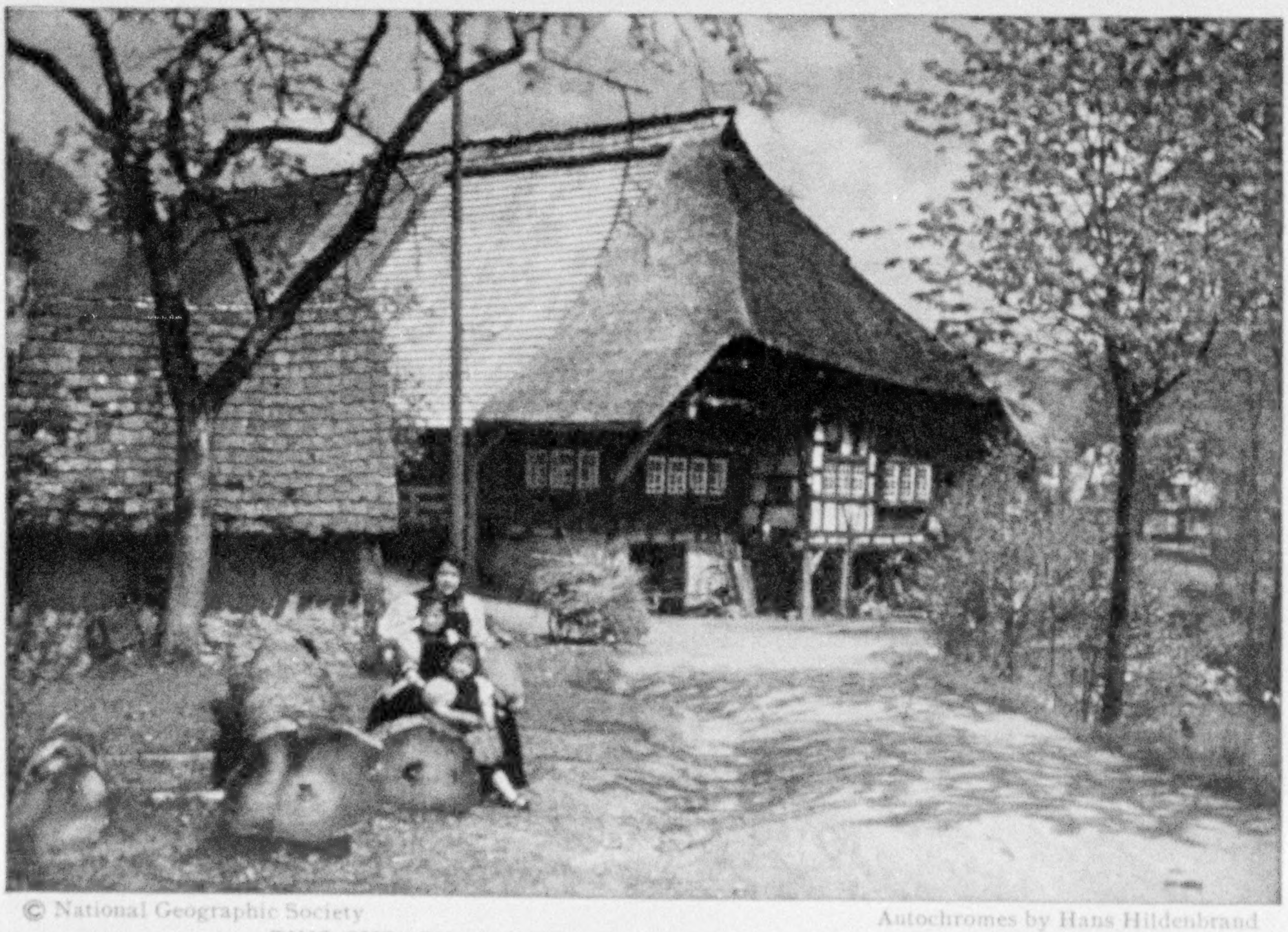
THE WOMEN OF THE BLACK FOREST HOLD FAST TO THE MODES OF THEIR GRANDMOTHERS

Such headdress heirlooms are sometimes inherited through ten or more generations. The girl at the left wears a bridal bonnet of gilt and glass balls. Her wedding festivities may last for three days and nights, and everyone in her village is invited. When a guest at the celebration gets tired, instead of going home, he simply goes upstairs to recuperate and then returns to the jollification below. Sometimes friends of a bride capture her on the day set for the wedding and make the bridegroom purchase her freedom at a cost of several barrels of beer.



ANCIENT HOMESTEADS NESTLE COMFORTABLY AMONG ROLLING HILLS

In the more remote districts of the Black Forest there are farmers who for years at a time do not leave the vicinity of their homes.



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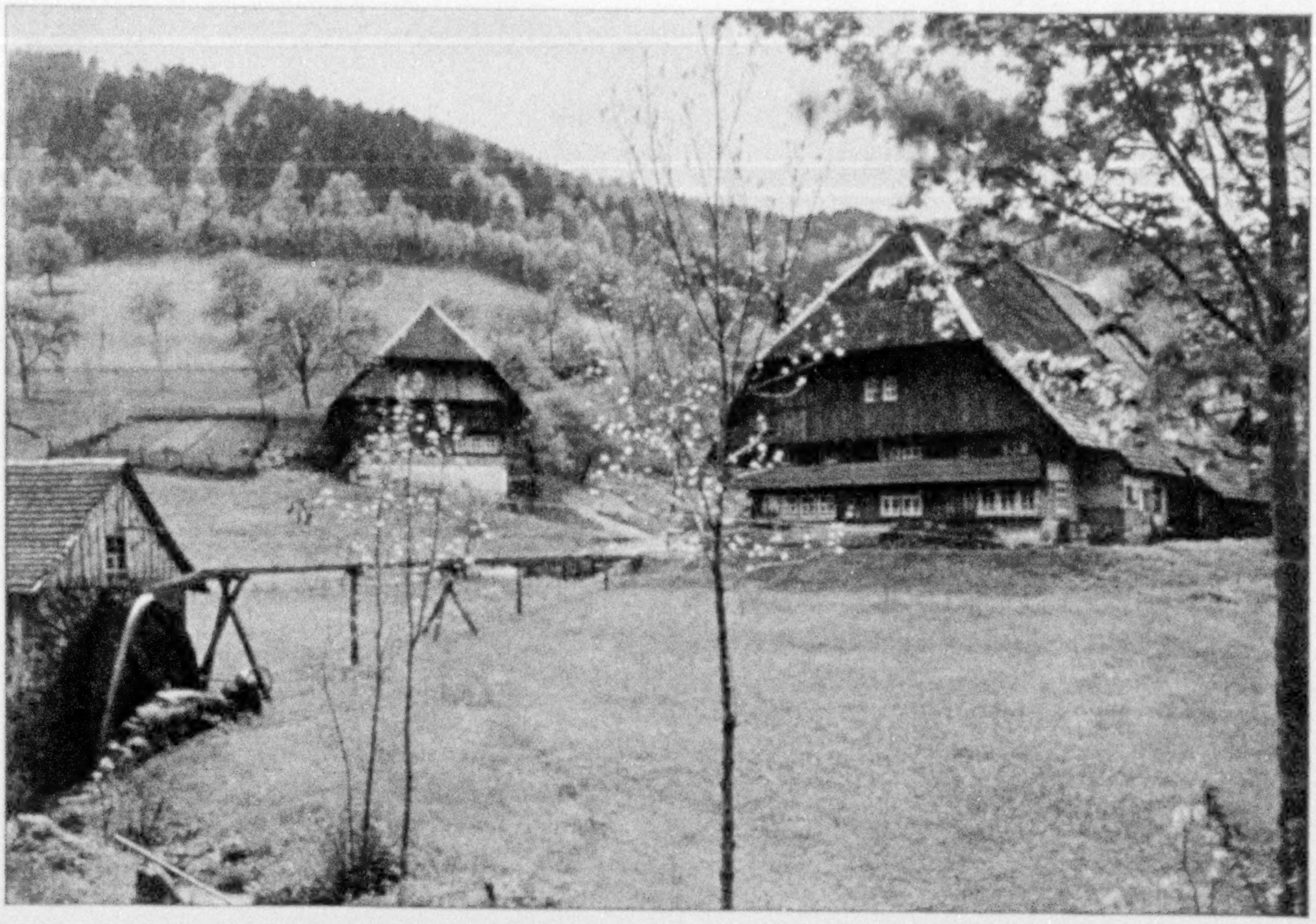
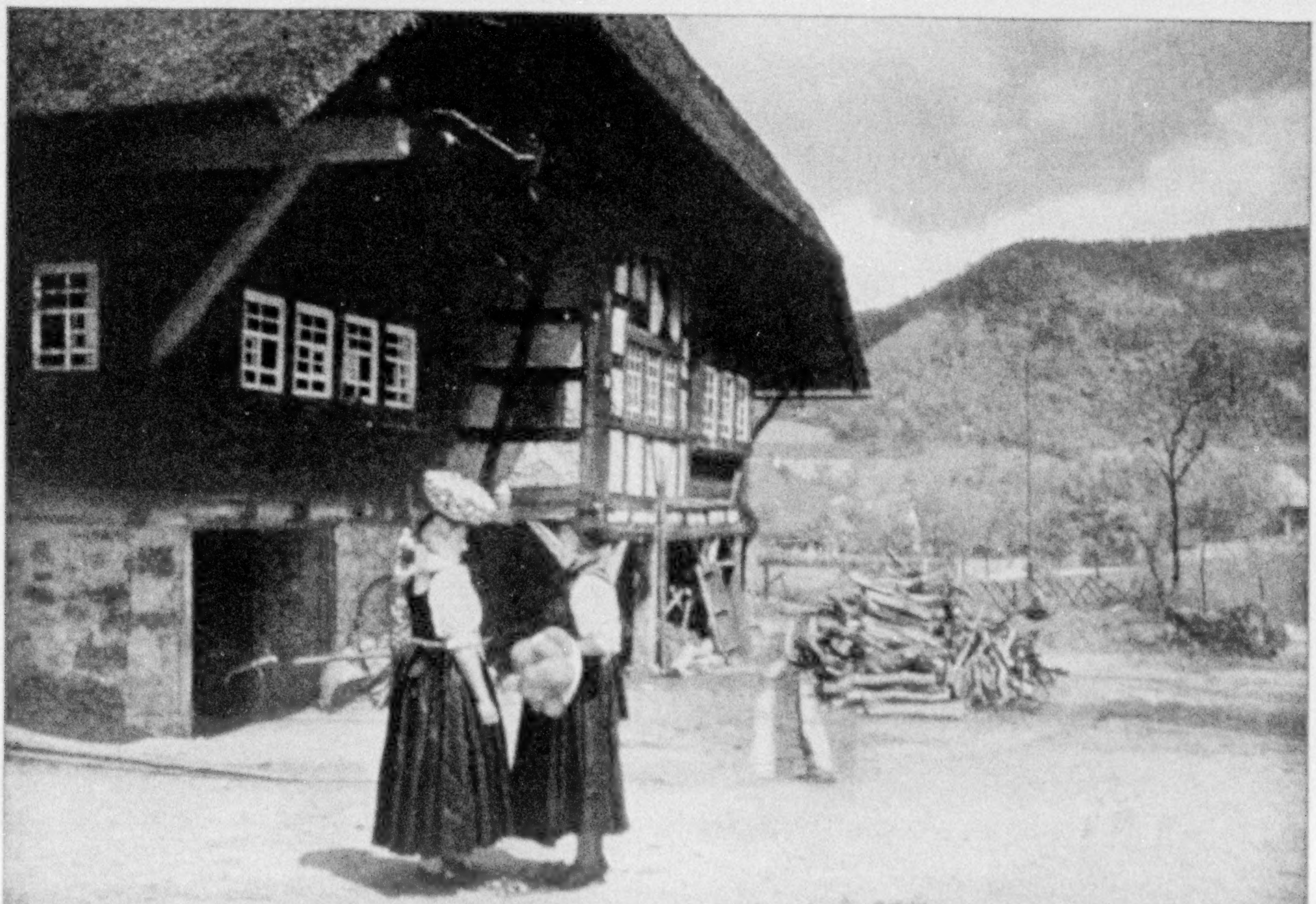
THIS GUTACH HOME HAS STOOD FOR FOUR CENTURIES

The professional builder or real-estate dealer would find little to do in the Black Forest, where houses have been built to stay. Title to them remains in the same family for generations.



A LARGE FARM IN THE KIRNBACH VALLEY

There is no class distinction in the Black Forest; among the peasants, old and young, rich and poor, work long and hard.



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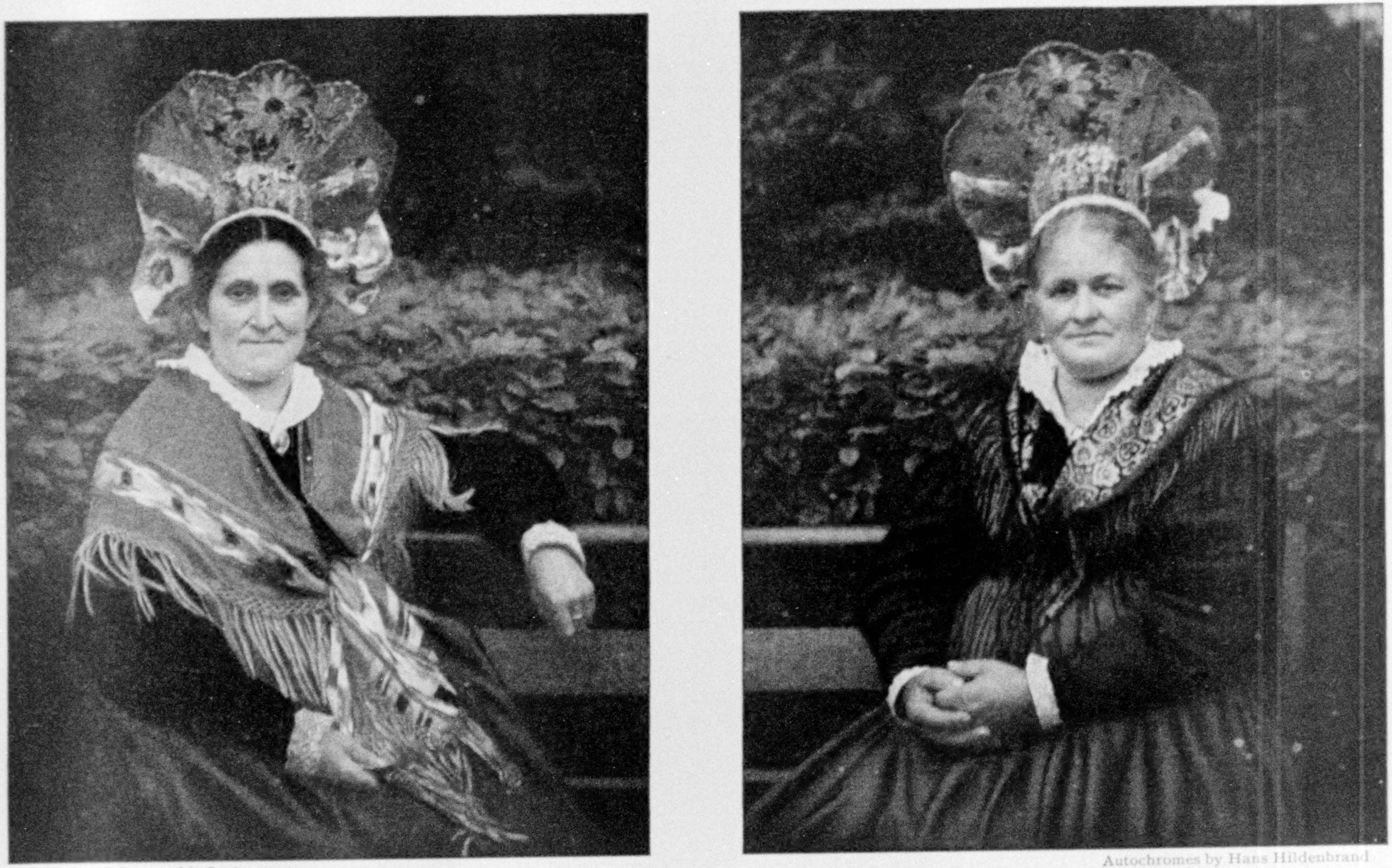
ONE STRUCTURE SERVES TO HOUSE A FARM'S WHOLE POPULATION

With a fine economy of space, the commodious dwellings of the Gutach region are arranged to accommodate the family in the front and the domestic birds and animals in the rear.



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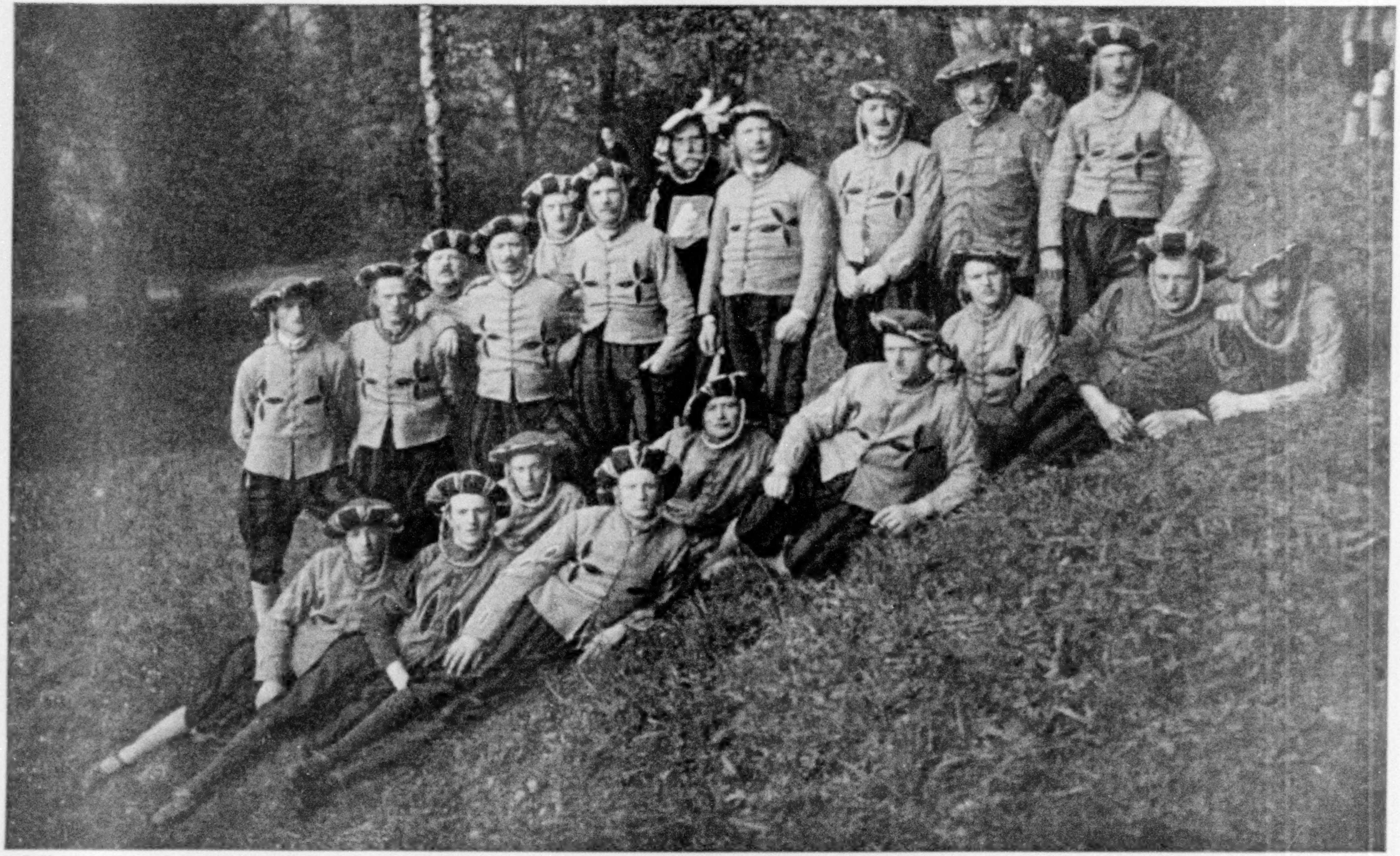
CLEANLINESS AND ORDER ARE CARDINAL VIRTUES TO THESE HOUSEWIVES

Husbands seldom have to suffer through experimental housekeeping in this part of the world, for Gretchen is already an experienced domestic artist when she marries. She has learned from her mother to cook well and to keep her household spic-and-span and she will in turn pass these domestic virtues on to her daughter. These matrons are from Radolfzell, on a branch of the Bodensee (Lake Constance), and represent two distinct racial types: at the left, one of Alemannian descent whose ancestors have long lived in this vicinity; at the right, a woman of Lombard strain whose forbears came from the north in centuries past.



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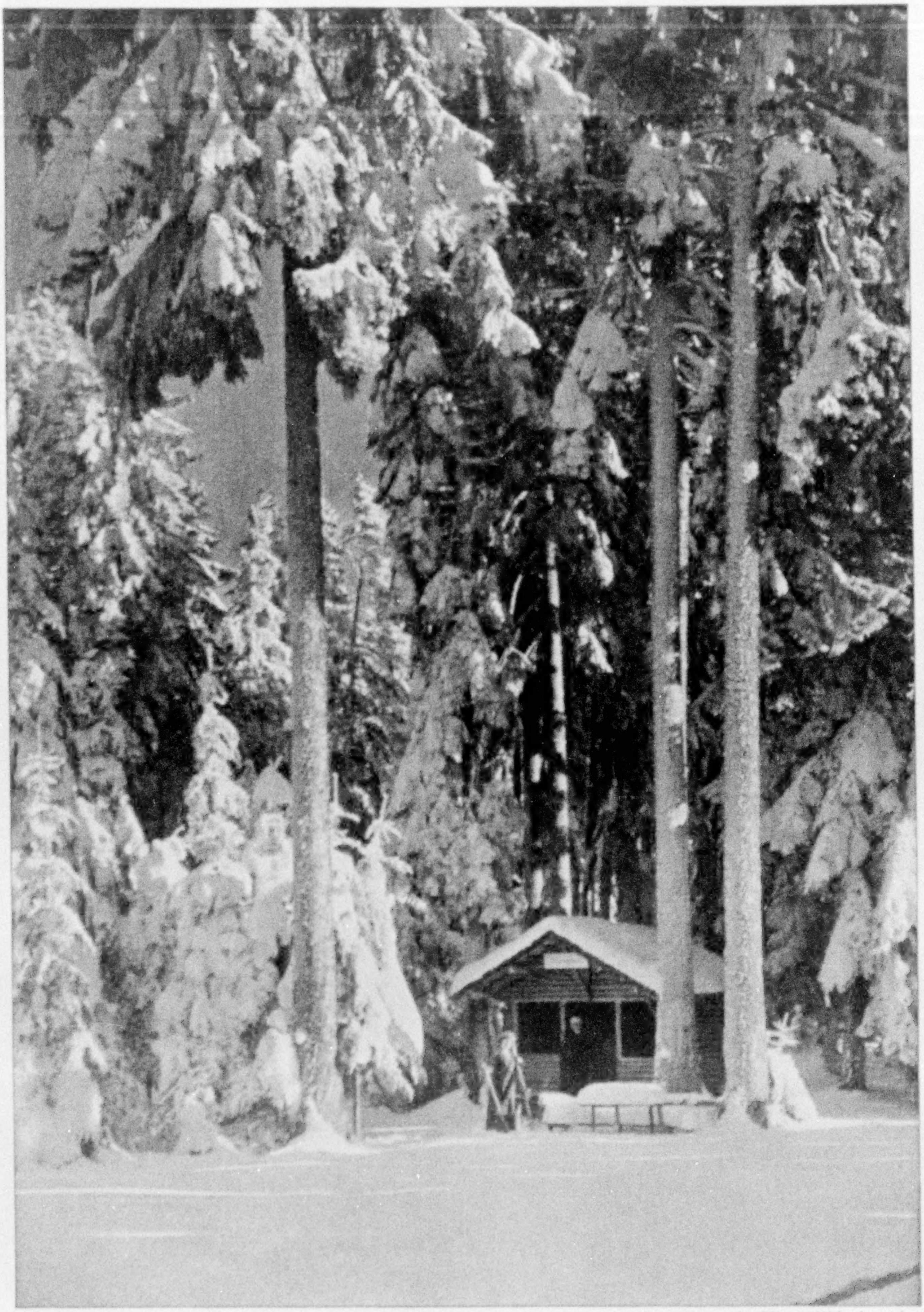
YOUNG MEN OF BREISGAU IN THE LIVERY OF A NOTED CORPS OF OTHER DAYS

During the 15th, 16th and 17th centuries the Landsknechts of Swabia ranked with the Swiss as among the best and most sought-after mercenaries in Europe. Indeed, modern armies owe much of their regimental organization to those professional fighters.



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THE FROST KING WORKS HIS MAGIC,

Few corners of the world are more thoroughly steeped in the romance and traditions of a people than Germany's famous Black Forest. It lies largely in the States of Baden and Württemberg, paralleling the Rhine. Most of its trees are firs, and their dark shades earn for the region its somber appellation. It is a playground dear to the hearts of those who enjoy hiking in summer and skiing or coasting in winter. Resthouses, such as this snow-clad hut, are conveniently scattered throughout the forest.

states (including three free cities—Hamburg, Bremen, Lübeck—and the Reichsland, as Alsace-Lorraine then was called), there are now only eighteen in the Republic.

Indications of Germany's momentous reorganization of her business as well as of her political and geographic structure are not lacking to those who follow the daily course of events. The unification movement is by no means limited to the German mind or to political phenomena. Indeed, through the channels of standardization and the so-called "rationalization," which simply means applying the highest measure of efficiency to a given undertaking, Germany has changed vastly since pre-war days.

Her industry has unified itself to a sensational degree. Having first engineered vast industrial combinations or trusts at home, the Germans more recently have taken the lead in organizing similar associations, known as international cartels, abroad. Through their initiative, the principal industries of the European continent are fast uniting to show a solid front to the rest of the world—notably America.

GERMANY'S LOSSES IN TERRITORY AND RESOURCES

Before delving into the operation of these cartels, it becomes necessary to recall briefly how German industry emerged from the World War and its subsequent development.

Through the Versailles settlement or the plebiscites it decreed, the Reich lost approximately 27,000 square miles of territory out of its pre-war aggregate of more than 208,000, and 6,475,000 inhabitants out of a total of upward of seventy million. What was more important, it was deprived of large and prosperous industrial areas in Alsace, Lorraine, the Saar Valley, and Upper Silesia; but the most serious loss of all, industrially speaking, was the cession to France of the Lorraine iron deposits. This had the effect of divorcing the great steel and iron plants in the Ruhr district, the biggest industrial concentration in all Europe, from their nearest and best supply of iron ore.*

Soon after peace, a few industrial leaders in both countries—notably Louis Loucheur, then French Minister of Reconstruction, and Walther Rathenau, the German statesman, and Hugo Stinnes, in Germany—realized the imperative necessity for bringing Ruhr coal and Lorraine iron together again. Stinnes, however, tried to create a monopoly for his own exclusive profit, and destroyed thereby the vast industrial empire he had built up during and immediately after the war.

Loucheur and Rathenau, meeting at Wiesbaden in 1921, had more success. The reconstructive program tentatively agreed on by these two statesmen was a first step toward the economic rapprochement so essential to both nations, and now, seven years later, in full swing. Rathenau, however, was assassinated shortly afterward and his policies suffered a temporary eclipse.

THE TRAGEDY OF 1923

Then, in the fall of 1922, a nationalistic government headed by Dr. C. J. W. Cuno took command at Berlin. The Allies charged Germany with willful default in her reparations payments, and at the beginning of 1923 French and Belgian troops occupied the valley of the Ruhr. A technical commission composed of French, Belgian, and Italian engineers undertook to extract the sums due on the reparational account out of the Ruhr industries.

The Germans countered with passive resistance, which meant the cessation of virtually all productivity. The Allied technicians—or, rather, the French, for the Italians and Belgians soon threw up the sponge—tried to operate the steel mills and factories themselves. In the face of the German workers' refusal to work, the attempt proved a dismal failure.

So the effort to wed French iron to German coal by force, under the domination and for the sole benefit of France, ended in defeat. But Germany was also defeated, and her economic casualties were far heavier than her adversary's.

The mark fell from seven thousand to the dollar in the first days of January, 1923, to four trillion in November. German credit abroad was wrecked. The Government printing press was providing ever more worthless wages for the Ruhr

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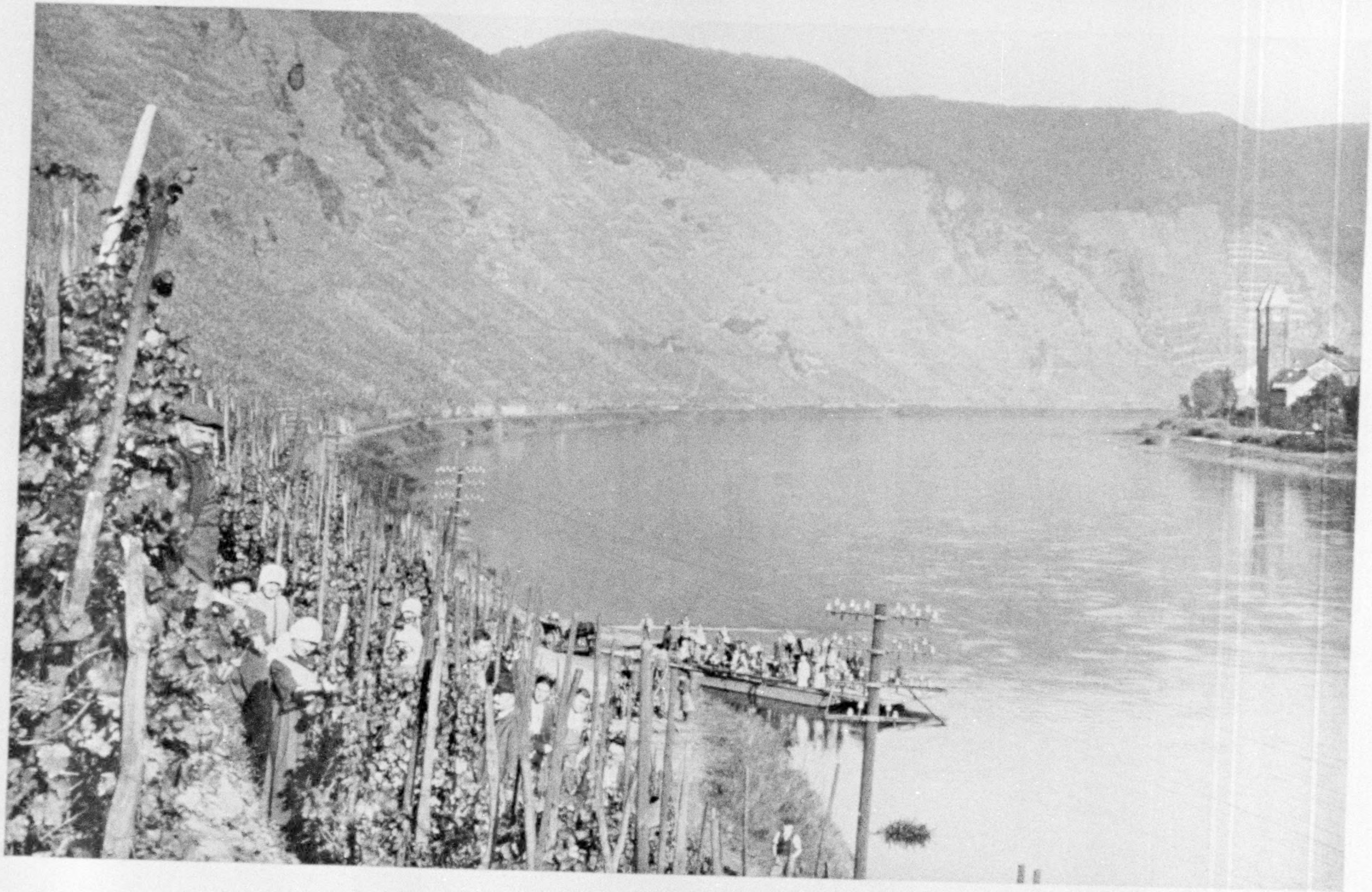
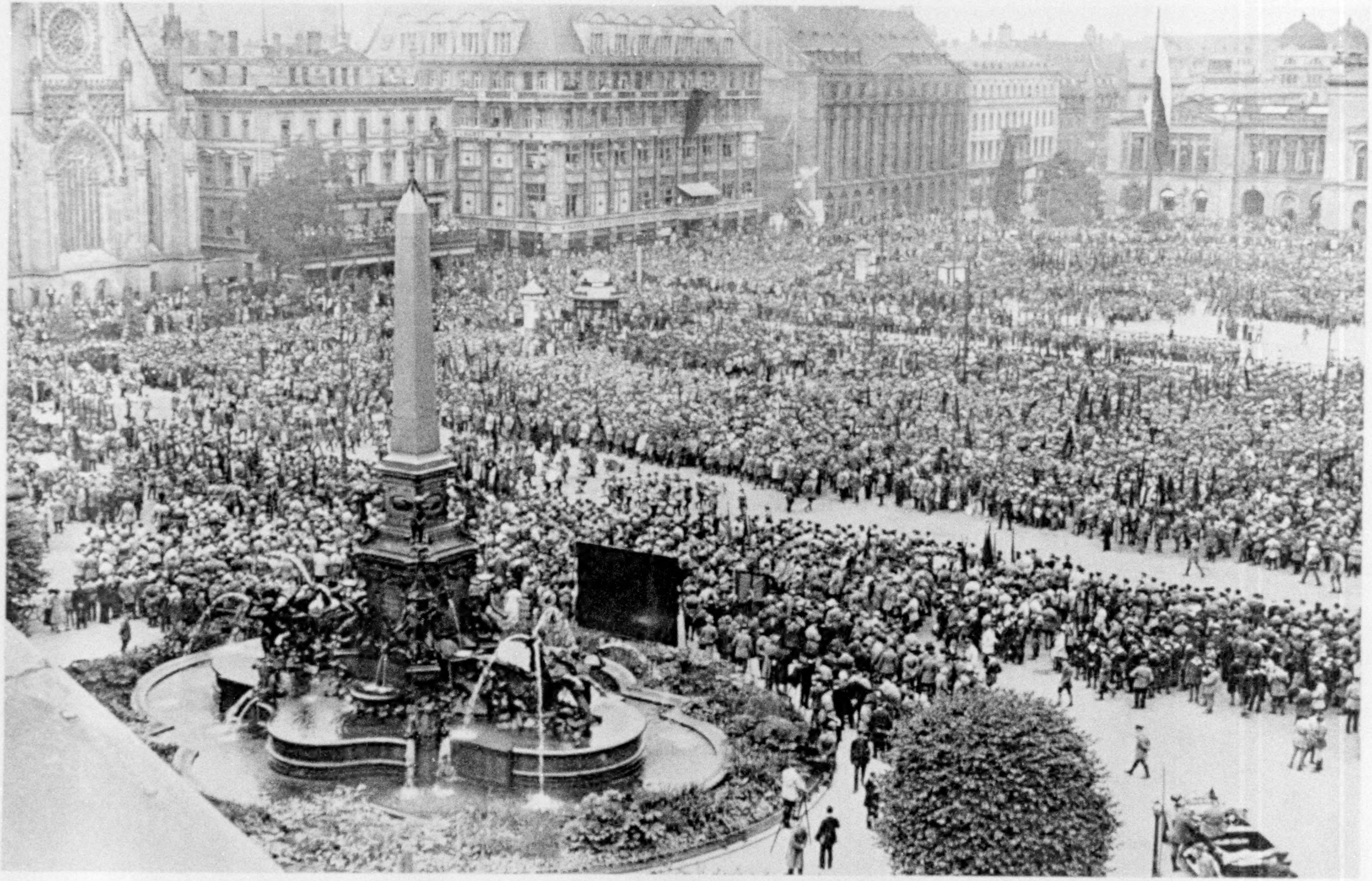
* See, also, "The Story of the Ruhr," by Frederick Simpich, in the NATIONAL GEOGRAPHIC MAGAZINE for May, 1922.



Photograph by Carl Kömmet

CROSSING THE STORIED RHINE BY FERRY AT VALWIG

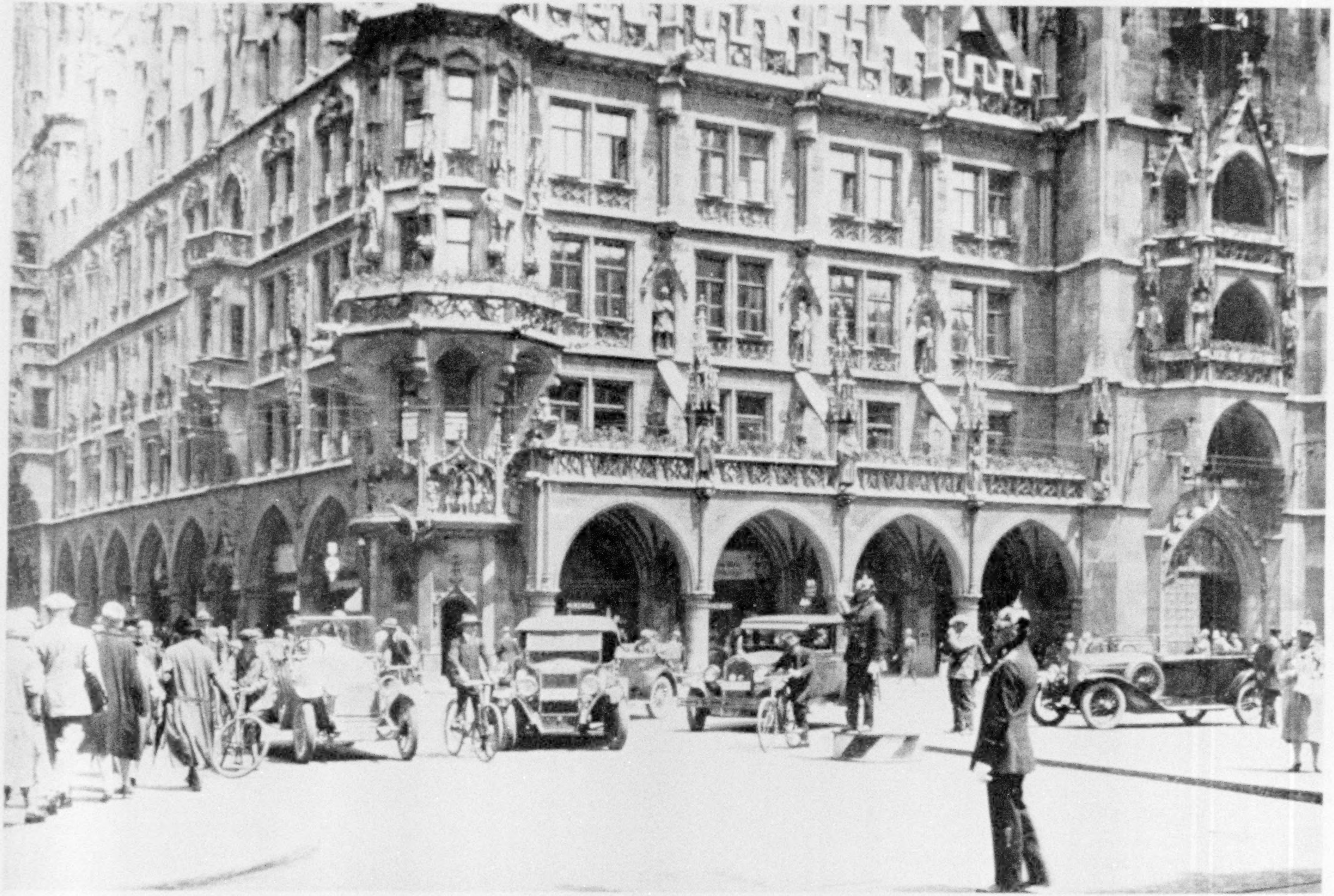
Ruined castles rise amid terraced vineyards that climb the rocky river banks. About every crag and cliff cling the legends of ancient days, when robber barons ruled this land—a land acquainted with battle long before the Cæsars came and rich Romans cured their rheumatism in Wiesbaden springs.



Photograph by Wide World

LEIPZIG IS FAMOUS THROUGHOUT EUROPE FOR ITS GREAT INDUSTRIAL FAIRS

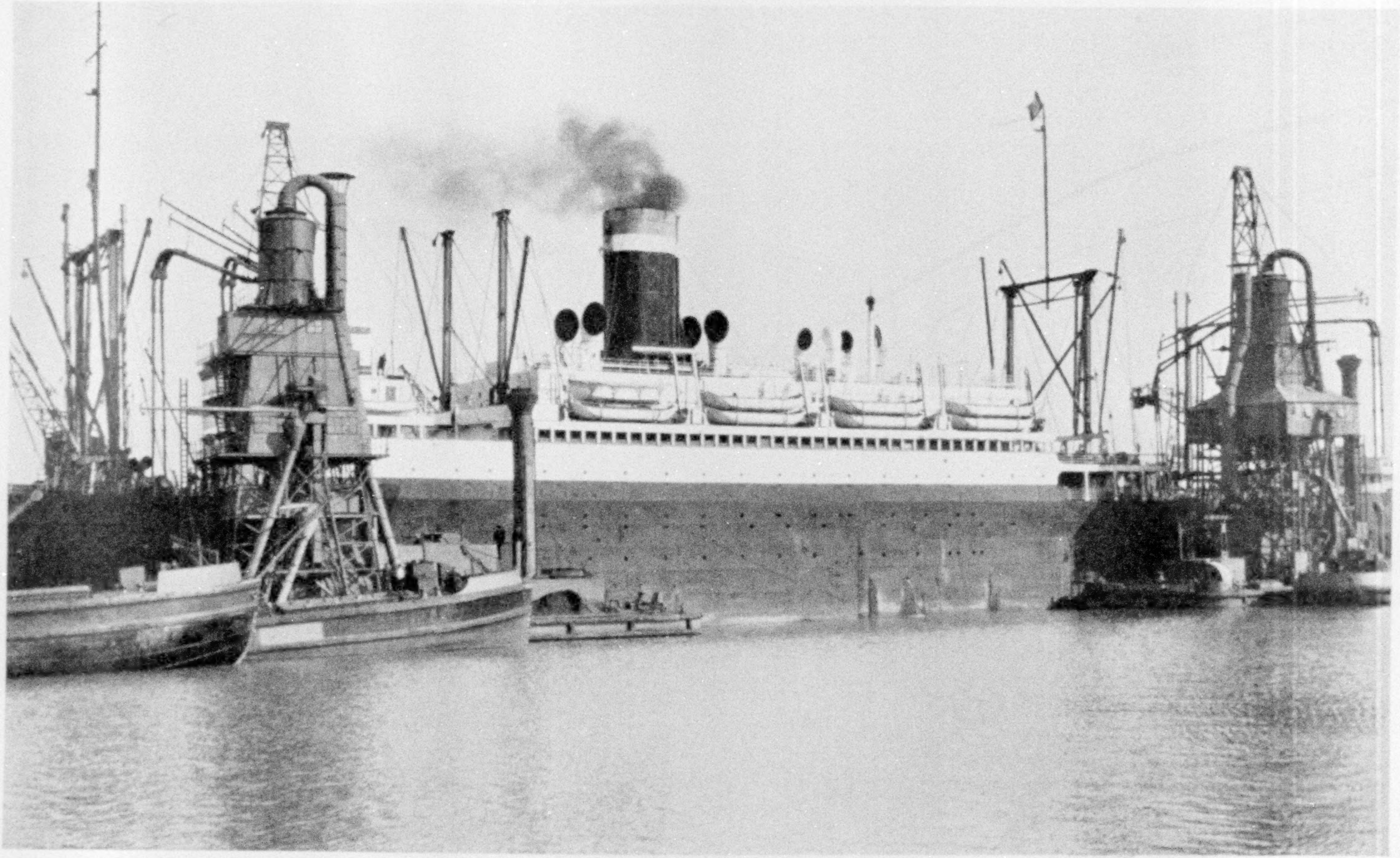
Fur traders and merchants flock here every year and manufacturers come with samples of the things they make, for exhibition in the endless booths. Buyers come from as far away as China, Australia, and the Western World. In noisy street parades during fairs many unique and bizarre figures and floats appear. A holiday crowd in the Augustusplatz.



Photograph by Ewing Galloway

THE MAGNIFICENT NEW RATHAUS, OR CITY HALL, AT MUNICH

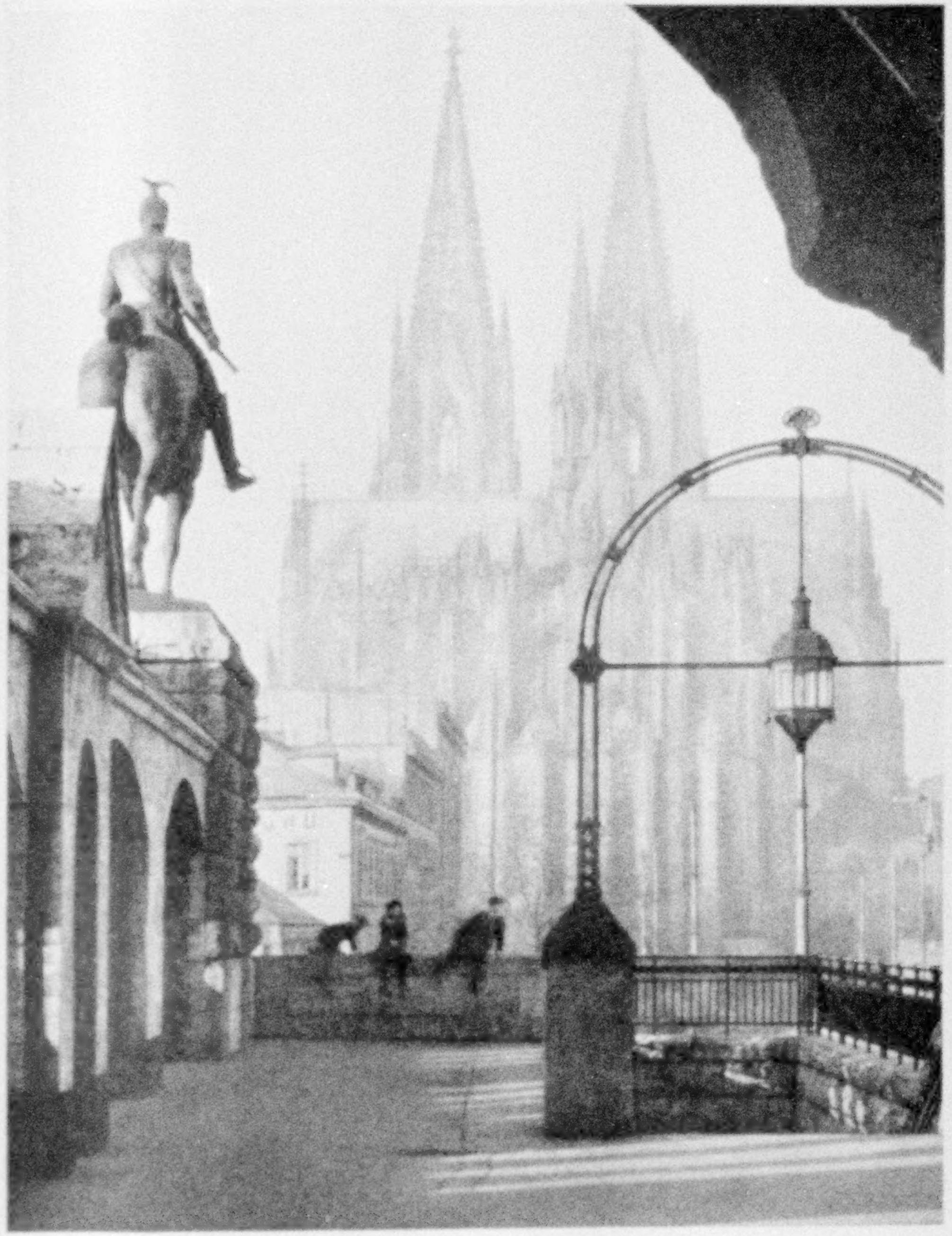
Elaborate Gothic ornamentation distinguishes this noteworthy example of modern German architecture. It was completed in 1906 and occupies nearly the whole length of one side of the Marienplatz. On the same square is the 15th-century Rathaus which it supersedes.

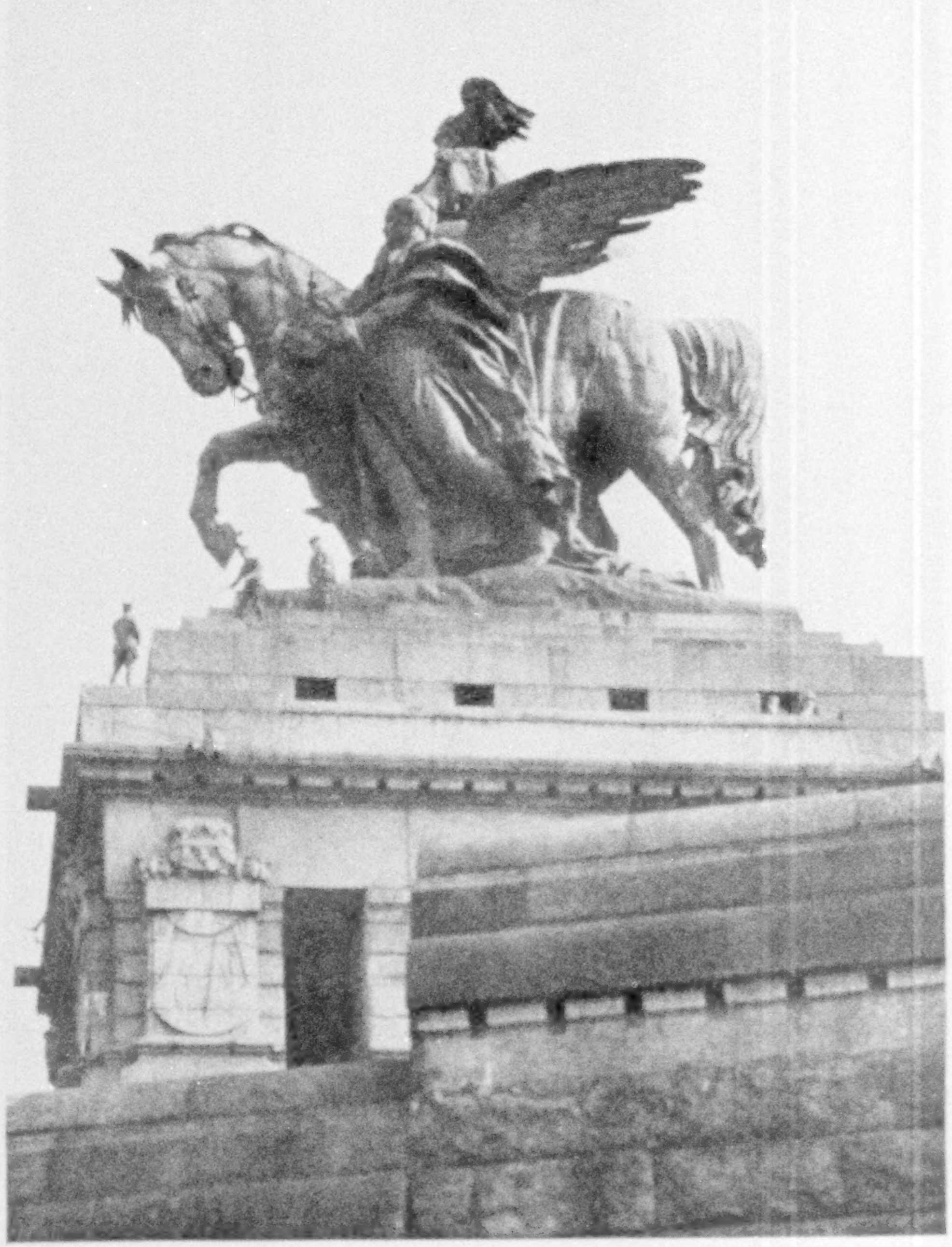


Photograph by Ewing Galloway

MUCH OF OUR SEA TRADE WITH GERMANY IS NOW CARRIED IN AMERICAN BOTTOMS

Bremerhaven and Hamburg are Germany's chief seaports (see, also, page 704). The American liner, *President Harding*, has landed her passengers and is discharging a cargo of American wheat at Bremerhaven by means of a vacuum suction device.





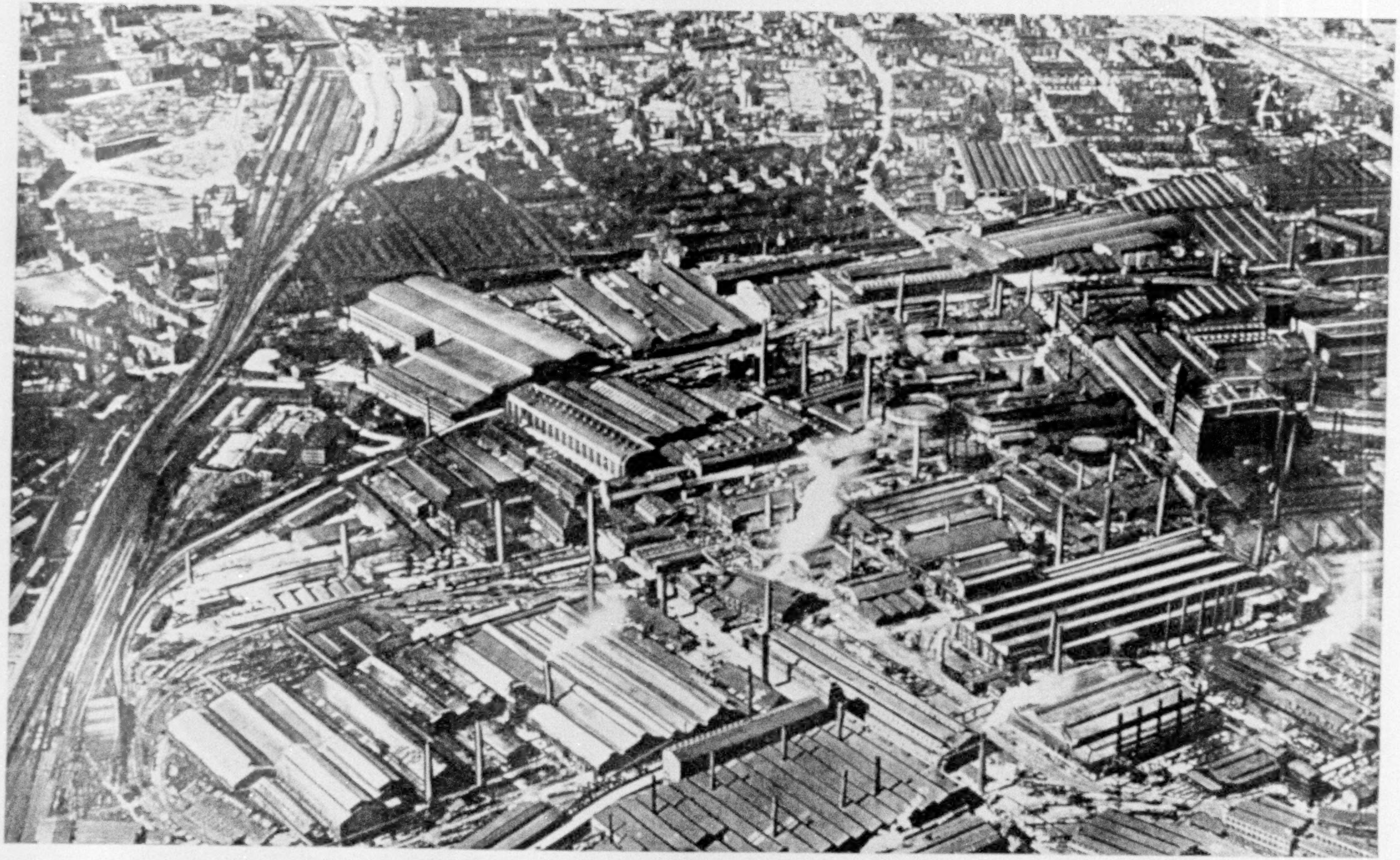
Photographs by Harrison C. Ryker

ONE OF MAN'S MASTERPIECES, THE MAJESTIC COLOGNE CATHEDRAL

The soaring towers and mighty bulk of this church dominate the historic Rhineland city. It was under construction for more than six centuries. This rear view of the twin towers is from the Hohenzollern Bridge.

EVERY DOUGHBOY OF THE ARMY OF OCCUPATION WILL RECOGNIZE THIS COLOSSAL FIGURE

From far and wide Yankee soldiers looked up at this huge monument to Emperor William the First, which stands near the junction of the Rhine and the Moselle. "The Denkmal," they called it, and three of them are seen perched near the giant horse's uplifted foot (see, also, illustration, p. 680).



Photograph by Wide World

MANY OF THE WORLD'S BIGGEST GUNS WERE MADE HERE, BEFORE GERMANY LOST THE WAR

For years the great Krupp plant, at Essen, was famous for the war weapons it turned out. Now, with characteristic German thrift and adaptability, it is busy making locomotives, farm machinery, and a host of other products of iron and steel (see, also, text, page 706).

Photograph by Ewing Galloway

GOLD IN THE REICHSBANK VAULTS IN BERLIN

The most-used word in all tongues is that for money. Because of their financial plights in recent years, Germans probably talk more of money than do any other people. In 1923 their worthless paper marks swamped the whole earth—Americans lost millions of dollars on them. The gold shown here helped stabilize the new mark.

workers. There and elsewhere throughout the country labor was running a losing race against the cost of living—trying to buy food before wages, paid every three days, melted away to nothing. Some 60 per cent of the population were constantly on the verge of starvation.

PEOPLE LIVED RECKLESSLY ON BORROWED MONEY

Anybody with any capital whatever lived on paper money recklessly borrowed from the State through the banks and repaid when its original gold value had reached the vanishing point. Although there was practically no unemployment, bread riots occurred in every city because of the impossibility of buying enough food with worthless money. Real currency was nonexistent. Those who had Devisen (foreign moneys) hoarded them secretly or banked them abroad.

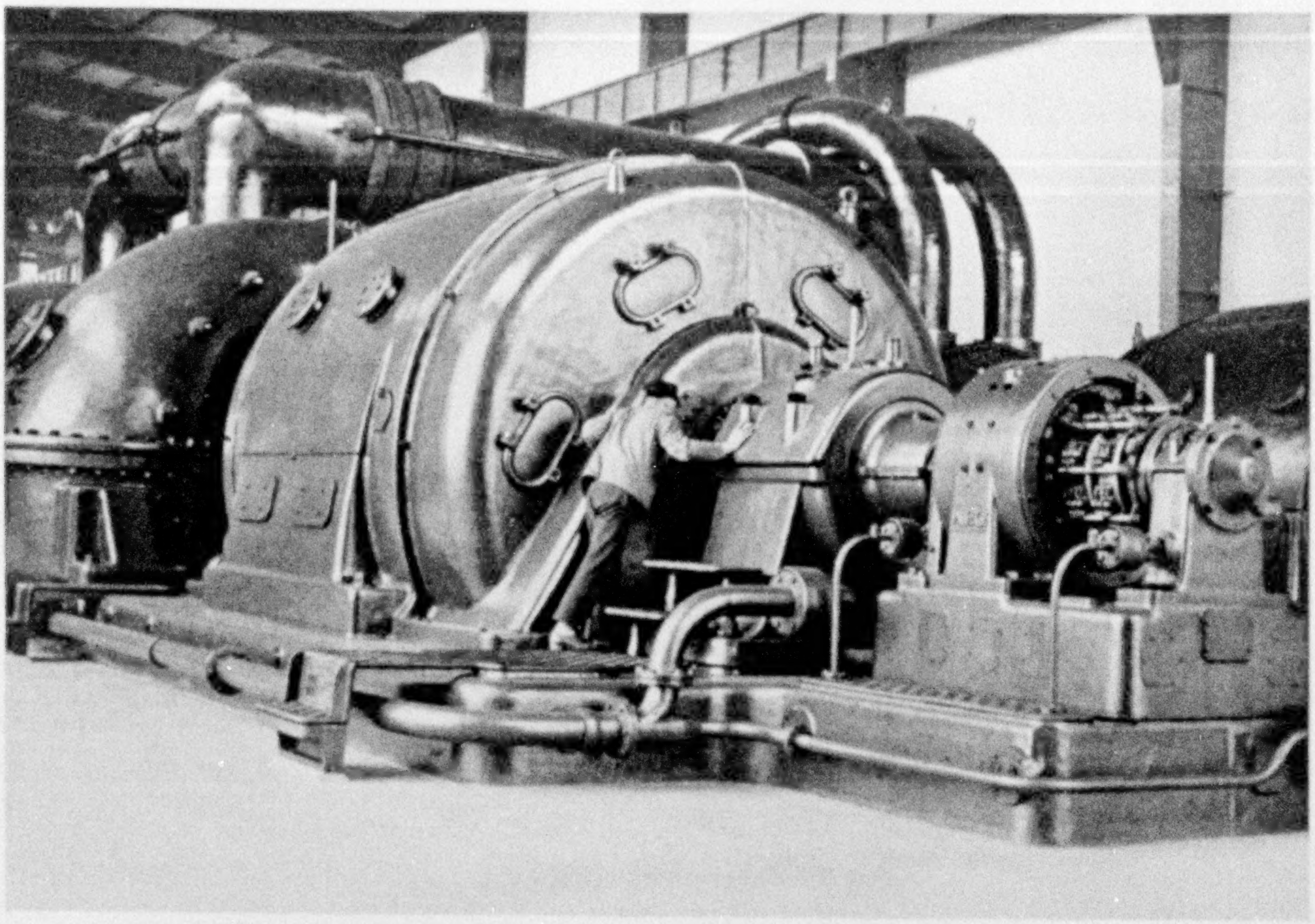
The industrials were all-powerful because they were able to obtain Devisen by selling their products outside Germany. The numerous class whose income had been drawn from Government bonds and other supposedly gilt-edged securities was bankrupt.

Evidently this ruinous state of affairs could not continue indefinitely. Dr. Gustav Stresemann succeeded Cuno in the Chancellorship, and passive resistance was dropped. Overnight—simply by stopping the paper money presses—the Reich stabilized its currency, introduced the Rentenmark, and prepared to balance its budget.

THE DAWES COMMITTEE GAVE GERMANY A BREATHING SPELL

The Dawes Committee came to Berlin, looked the situation over, returned to Paris, and drew up the Experts' Plan. Under this plan German financial stability was insured by an international loan, and Germany was granted a breathing spell, called a moratorium, in the payment of reparations, to facilitate her economic rehabilitation.

The Reichstag accepted this solution. So the new régime was inaugurated, with an American, S. Parker Gilbert, Agent



Photograph by Wide World

THE GERMAN MIND DELIGHTS IN BIG MACHINES

Teutonic nature worships power, whether exemplified in human leadership or expressed in man-made engines. A part of a turbine plant at Rummelsburg, near Berlin, one of the largest in the world, where three turbines produce 240,000 kilowatts.

General for Reparation Payments, installed in Berlin as executor of the Dawes Plan and supervisor of Germany's finances.

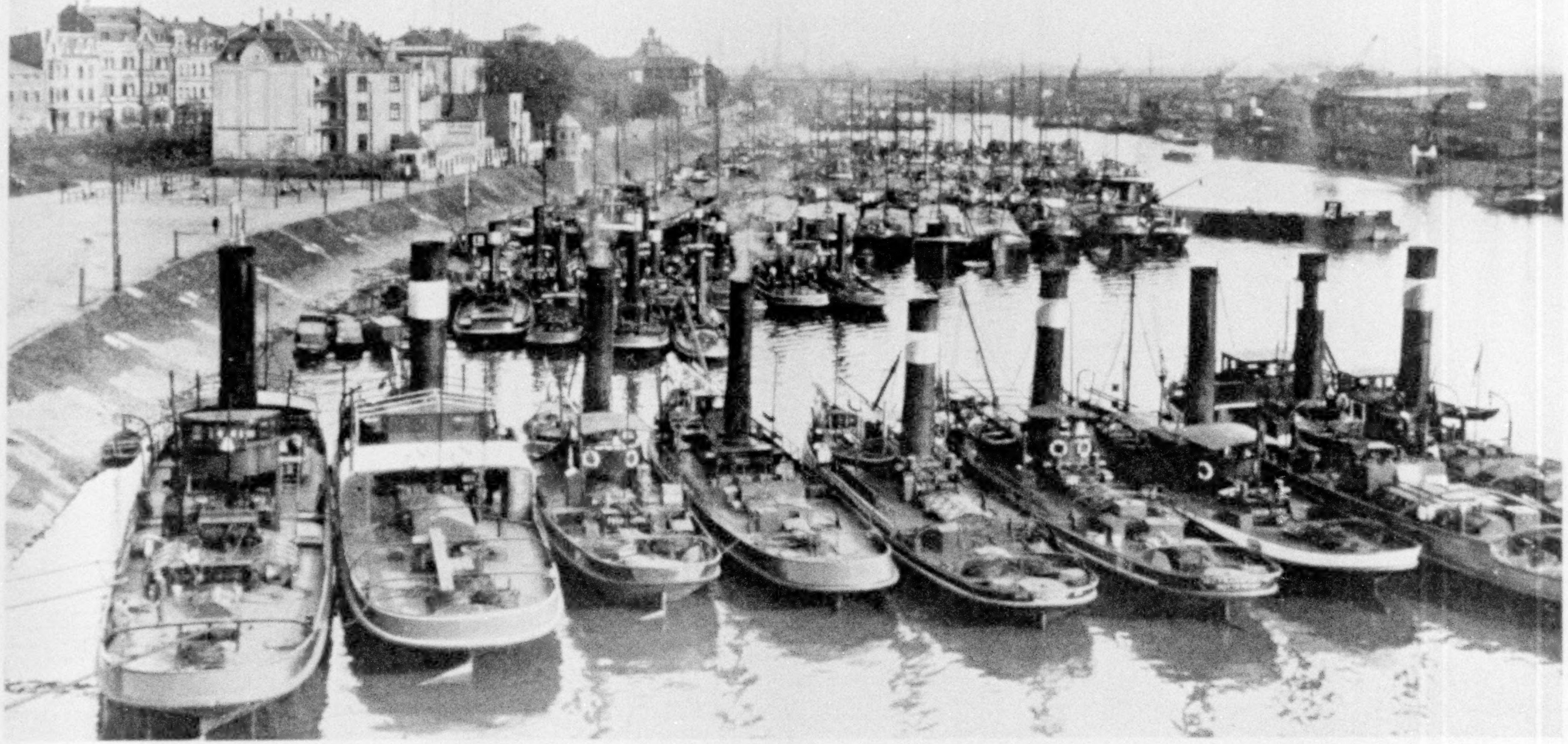
The immediate result of all this was to weaken German industry's stranglehold. Why? Because money once more resumed its sway over the country's trade. During the inflation years money—that is, the Reich's fast depreciating paper notes—had been worthless in comparison with the sachwerte, the material values in stocks plants, and equipment, possessed by the leaders of industry.

GERMAN BANKERS RESUME CONTROL

As soon as the currency became stable and therefore valuable, however, the possessors of cash regained the upper hand. The enormous profits amassed by manufacturers and merchants, through paying labor in paper money borrowed from the State on the security of their sachwerte and repaid after its value had fallen to practically nil, had been sunk in the enlargement and improvement of their enterprises—that is, in the acquisition of still more sachwerte; consequently they were short of ready cash. To meet their overhead charges they were obliged to turn to those who had cash, namely, the bankers, the State having ceased to be a lender. So, once more the big German banks ruled the economic roost.

Their reign was rigorous and ruthless, too. One after another the great over-expanded industrial concerns either collapsed like a pricked balloon, as in the case of the mighty Stinnes estate (whose founder had died in the meantime), or were forced to reorganize on a considerably constricted basis. Thus the era of rationalization began.

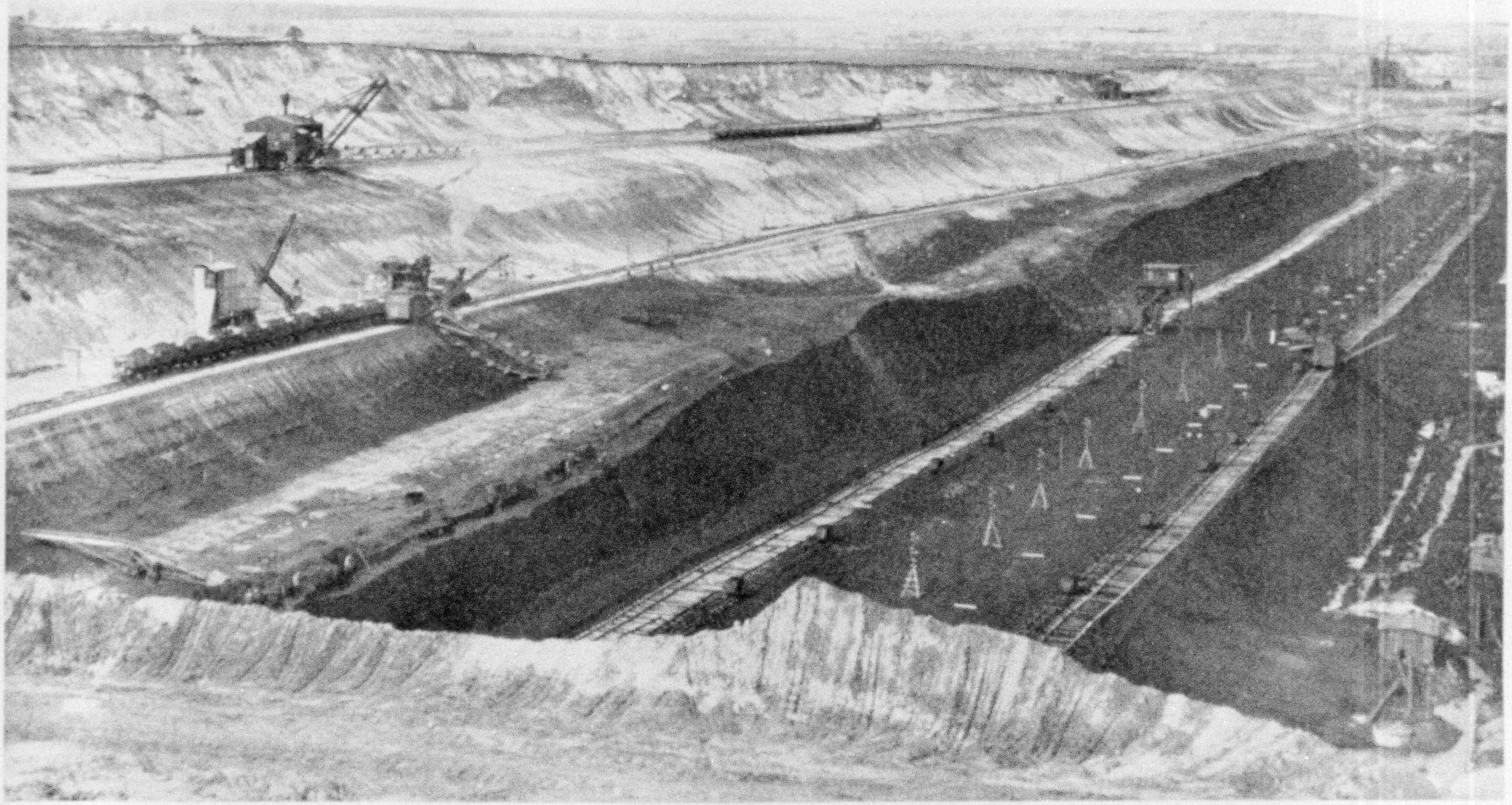
Even among the most powerful corporations few were able to weather this storm. The Krupp works of Essen, foremost of them all during the war, survived only by the most drastic diminution of its productive scope. Its working force was reduced from 200,000 to 50,000. All over the Ruhr, mills, blast furnaces and factories whose production was difficult to



Photograph by Ewing Galloway

THE CROWDED, BUSY RHINE AT DUISBURG

Before the World War, there was more tonnage on the Rhine than in the whole sea-going American merchant fleet. See, also, in the NATIONAL GEOGRAPHIC MAGAZINE, "Rediscovering the Rhine: A Trip by Barge from the Sea to the Headwaters of Europe's Storied Stream," by Melville Chater, July, 1925.



Photograph by Ewing Galloway

THE LACK OF AN ADEQUATE HOME SUPPLY OF GOOD FUEL HINDERS GERMAN INDUSTRY

Quantities of oil, gasoline, and coal are imported. Brown coal, usually made into briquettes, is stripped from vast open pits in several parts of Germany. Generations from now, when such open-pit mines are exhausted, how people may speculate on the origin of these vast, craterlike depressions! An open-pit coal mine in Prussia.

Photograph by Pacific and Atlantic

PASSION PLAYERS OF TO-MORROW GO A-RACING ON THEIR SKIS

At Oberammergau children of actors in the famous Biblical drama adapt the favorite Scandinavian sport to their own Bavarian mountains. To the winner of this race the Passion Play community awards a prize.

finance were scrapped or sold at bargain prices. Payrolls were pared down with utter disregard of the human consequences and unemployment shot up to a total of two million workers receiving State doles.

TRUSTS CREATED TO SAVE INDUSTRY

Applied individually by various separate manufacturing enterprises, however, even these radical reforms proved insufficient to meet the stern requirements of the financial situation. The industrial overlords, under their bankers' lash, soon saw that, to escape the catastrophe that had befallen Hugo Stinnes's sons and heirs, they would have to get together and regulate both production and prices.

Thus there came into being such mighty conglomerations of industrial productivity as Vereinigte Stahlwerke A. G., commonly called the Ruhr Steel Trust; I. G. Farbenindustrie, its equivalent in the field of dyes and other synthetic chemical products; and the Potash Syndicate, a sales organization embracing all German potash mines. In the electrical industry the A. E. G. (General Electric Company) and Siemens & Halske, both of which had working arrangements with American interests—the former with the American General Electric Company and the latter with the Westinghouse Company—virtually formed an electrical trust.

In the machinery, textile, and other lesser industries similar amalgamations of capital took place. Official estimates place the total number of German cartels in 1925 at some three thousand, of which two thousand five hundred were industrial and the remainder commercial.

From the international standpoint, Vereinigte Stahlwerke (United Steel Works), with a capital of more than one billion marks, was the most important at the start, for its creation paved the way for the coming of the European Steel and Iron Cartel that established a rational partnership between Lorraine ore beds and Ruhr collieries.

Framed after the model of the United States Steel Corporation, this huge con-

Photograph by Ewing Galloway

ONE WONDERS HOW, IN SUCH COSTUMES, MUSICIANS CAN KEEP A TUNE IN MIND

Strolling musicians are still an institution in Germany. These four young men, photographed at Bremerhaven, would win favor in American vaudeville if they brought this Tyrolean-like make-up with them.

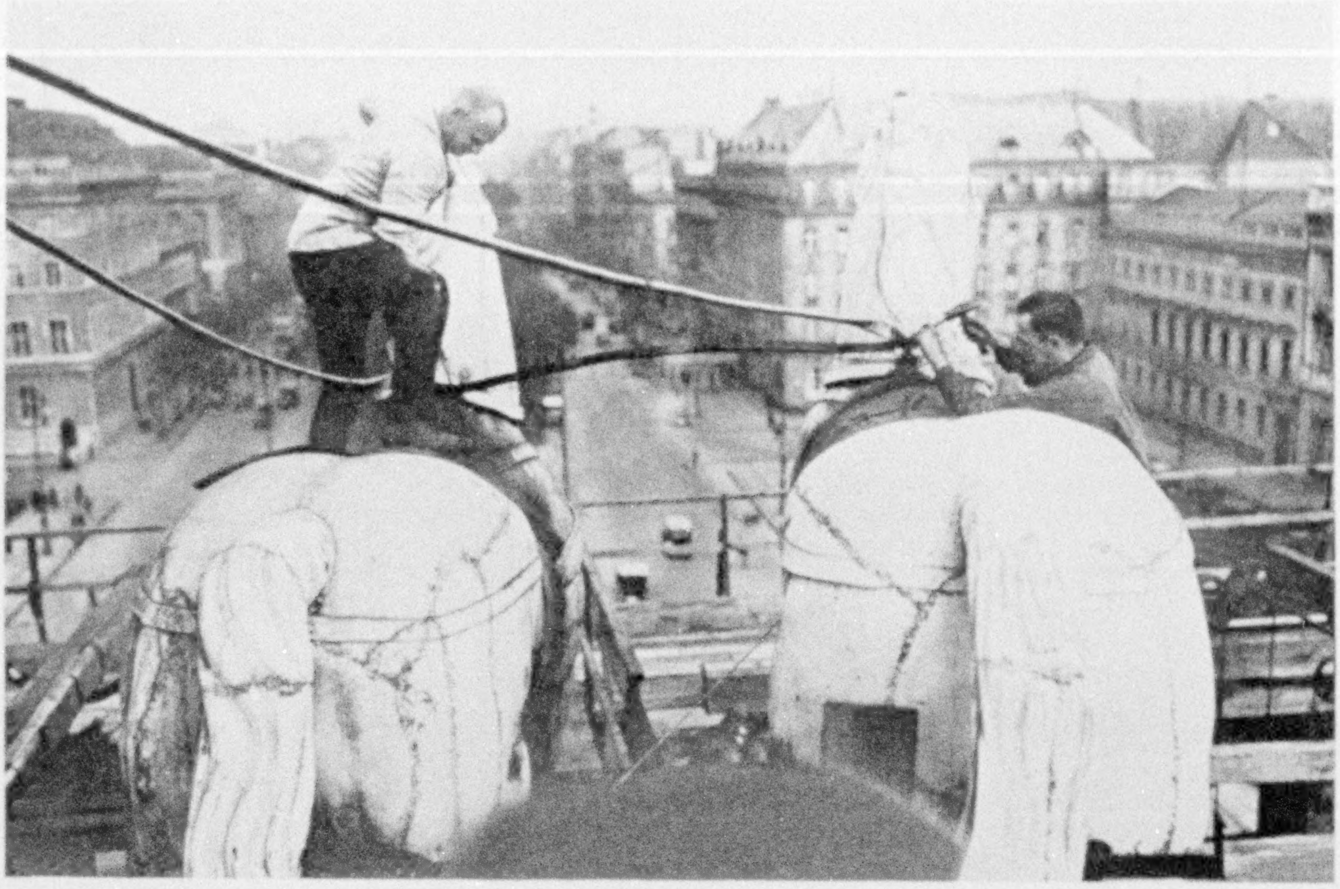
cern was founded in January, 1926. It comprised seven of the most important steel companies in the Ruhr and Rhineland, including the powerful Deutsch-Luxemburg, Thyssen, and Phœnix groups. In its first year Vereinigte Stahlwerke produced 7.4 million tons out of the total of 15.8 million tons of raw steel produced in Germany, or 46.8 per cent of that total. It also mined 22 per cent of the total coal production and close to one-half of the iron production.

The influence of the Ruhr trust on international steel relations has been far-reaching. It is through its efforts chiefly that the steel and iron production of most of the Continent has been aligned on a common front ostensibly directed against nobody in particular, but obviously threatening to the British and American steel industries.

INTERNATIONAL STEEL COMBINE ASSESSES PENALTIES FOR OVERPRODUCTION

Germany, with her Vereinigte Stahlwerke, provides the lion's share of the European steel cartel's annual output, 43 per cent. The Germans were most active in organizing this cartel, which came into existence in September, 1926, with France, Belgium, and Luxemburg as its other members. Primarily it is an organization for the international control of steel production. Representatives of the member States, which now also include Czechoslovakia, Austria, and Hungary, and which may shortly be joined by Poland, meet every three months to fix the total production for the ensuing three months.

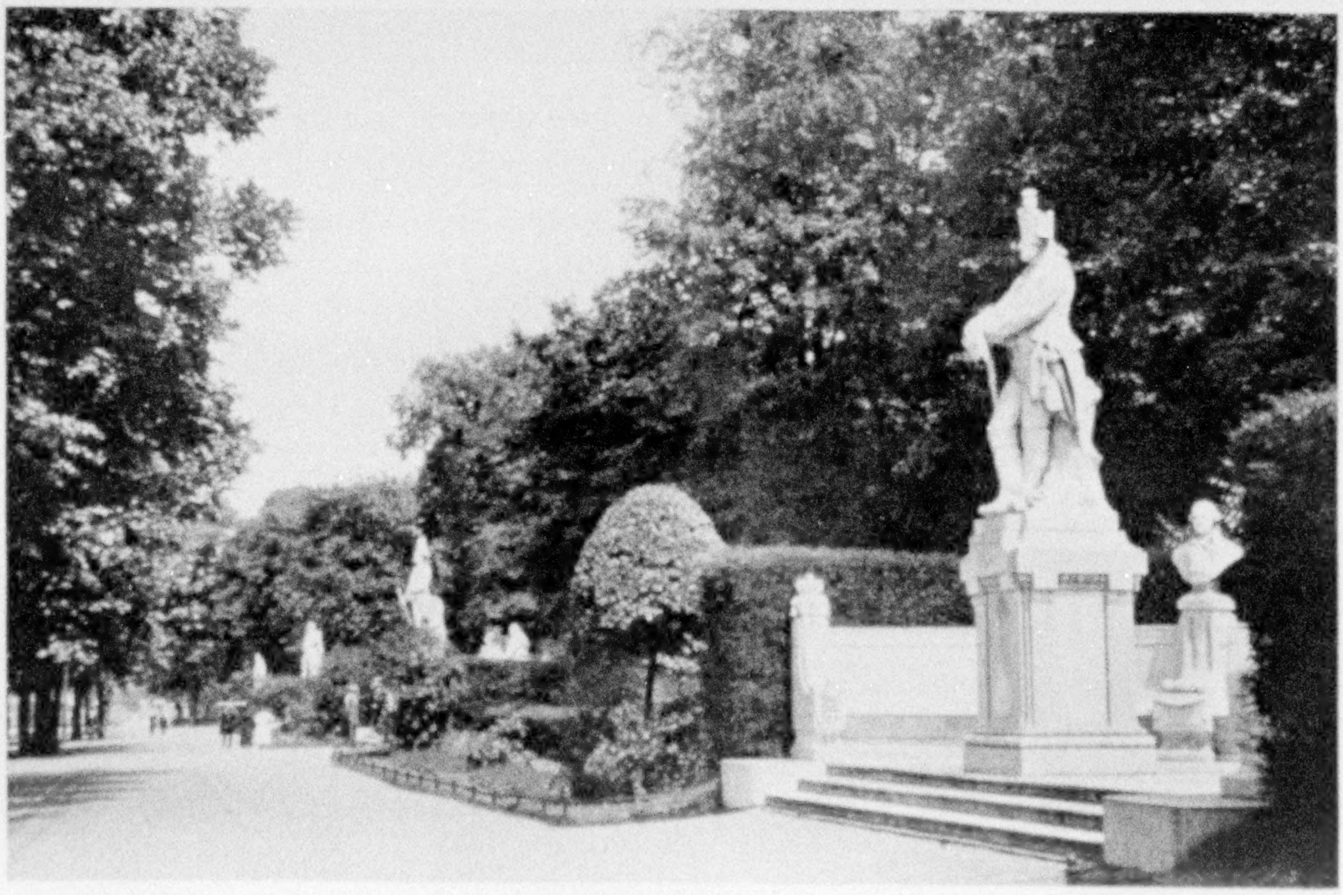
Originally, the first productive quotas were fixed on the basis of each member State's production in the first quarter of 1926. The national industry of each member State obligates itself to limit its output to the quota assigned it. Each nation whose product exceeded its quota originally contributed $4 to the cartel's common fund for every excess ton of steel produced. Any nation whose production fell below its quota received from this fund $2 a ton. This scale is modified



Photograph by Wide World

AFTER 150 YEARS THIS TEAM GETS NEW REINS

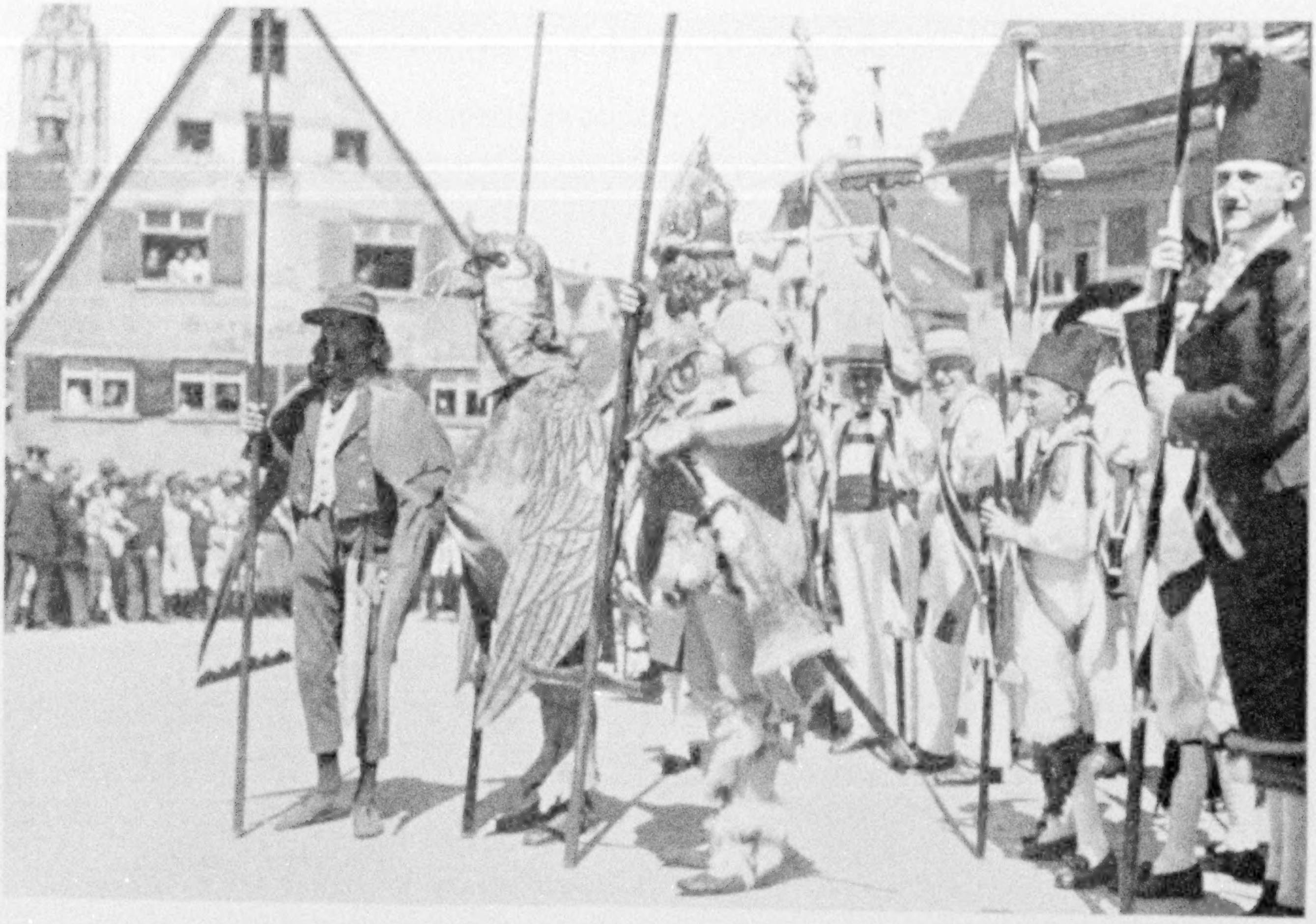
The big horses atop the famous Brandenburg Gate, facing down Unter den Linden, are a familiar memory to all who know Berlin. They were taken to Paris by Napoleon in 1807, but returned to Germany after his abdication, in 1814.



Photograph by Carl Lutz

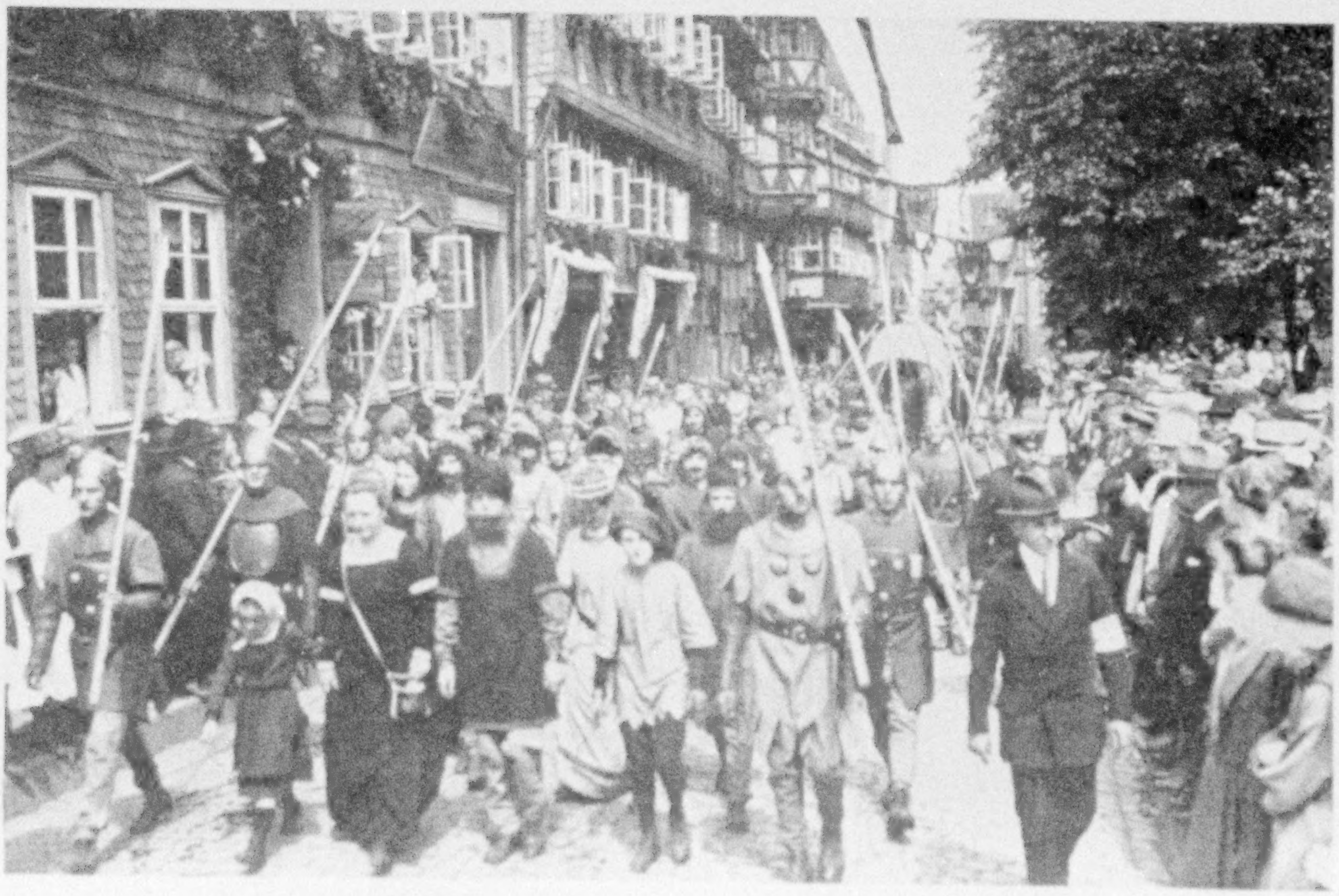
IN GERMANY A MONUMENT IS A DENKMAL, OR "THINK OVER"

No other land so bristles with monuments. The manufacture and export of marble and bronze monuments, especially to Latin American lands, is a special trade. Above is the Sieges-Allée, or Avenue of Victory, which intersects Berlin's Tiergarten. Its 32 statues of Brandenburg-Prussian rulers were erected at the expense of the last of the kaisers.



MEN OF ULM GARBED FOR AN ANCIENT FESTIVAL

Ulm ranks with Nuremberg, Rothenburg, and Nördlingen (see Color Plates, pages 707 to 714) as among the least spoiled of all Germany's medieval cities. Its magnificent Gothic cathedral, among German churches second in size to Cologne, can accommodate 30,000 people.



GOSLAR REËNACTS A SCENE FROM ITS HISTORIC PAST

Once a free imperial city and a member of the Hanseatic League, Goslar, in the height of its power, was protected by a massive wall with 182 towers of enormous strength. One of these, still standing, had a garrison of 1,000 soldiers. In this vicinity the famous Harz Mountain "roller" canaries are bred.

from time to time. The cartel's quarterly output now aggregates about thirty million tons.

It is interesting to note that Germany thus far has consistently produced more steel than the quota assigned to her by the cartel.

The cartel exercises no control over prices, either domestic or foreign. Thus competition in the export market exists normally among its member nations.

MORE THAN 20 TRUSTS NOW OPERATING INTERNATIONALLY

The other mutual benefit organizations internationally uniting European industry in general follow the principles of the steel cartel. There are more than 20 such trusts in official existence to-day.

They cover the following trades: raw steel, steel rails, tubes, roll wire, rayon (artificial silk), chemicals, potash, linoleum, borax, white lead, quinine, calcium carbonate, zinc, ferromanganese, tanning extracts, activated carbon, aluminum, enameled wares, glue, plate glass, bottles, superphosphate, incandescent lamps, and copper. Germany belongs to all of them with the exception of the plate-glass and copper trusts. Incidentally, the former and the bottle cartel are the only ones that were founded before the war.

France is a member of most of them, but Great Britain of only seven of the lesser ones. The United States thus far has joined only the copper and incandescent-lamp organizations.

Like the British, American industry has held aloof from the more powerful cartels, such as steel and chemicals. The former of these two offers the most direct competitive danger both to Britain and America.

As regards the chemical cartel, the backbone of which is the formidable I. G. Farbenindustrie, or German Dye Trust, there have been numerous negotiations between the Germans and Imperial Chemical Industries, Ltd., the foremost British concern in that trade; but thus far they have been inconclusive.

GERMAN AND FRENCH CHEMICAL INDUSTRIES COMBINE

American policy, at least as interpreted by European observers, appears to consist of establishing contacts with individual members of the cartels while holding aloof from membership in them.

Prior to the war Germany was in virtual control of the world's dyestuff markets. But during the war dye industries were built up by other great powers, including the United States and Great Britain. The consequence of this was that Germany's exports of this product dwindled dangerously. The total export of aniline dyes, for instance, dropped from sixty-four thousand tons in 1913 to seventeen thousand in 1925.

In that year German dye manufacturers saw the rocks looming ahead. They lost no time in organizing a united national defense against the economic catastrophe confronting them.

Under the leadership of the former Badische Anilin-und-Soda-Fabrik, whose poison-gas plant at Ludwigshafen was the objective of so many Allied air raids in the World War, and of the equally prominent Friedrich Bayer Company, internationally known as the maker of aspirin, a merger of the eight foremost chemical concerns was carried through and the German Dye Trust, capitalized at one billion marks, came into being.

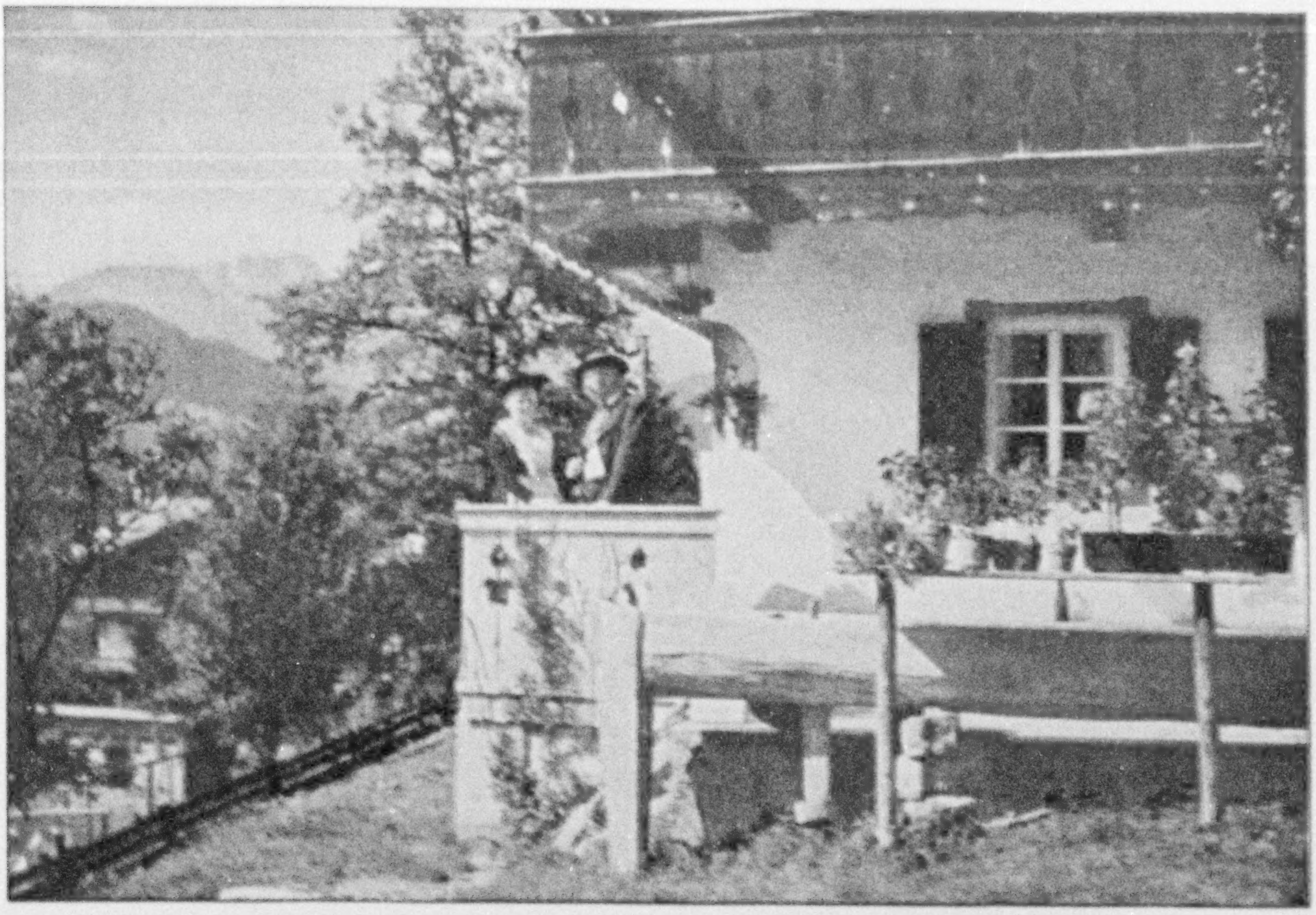
In the year after its formation Germany exported twenty-one thousand tons of aniline dyes, and in the first eleven months of 1927 twenty-six thousand tons. During the latter year negotiations were begun in Paris for the organization of the International Chemicals Cartel.

In 1927, the signing of a Franco-German dyestuffs entente as the basis of a billion-dollar European cartel was reported.

Since the value of American chemical exports is almost two hundred million dollars per annum, the menace of a pan-European combine can readily be perceived.

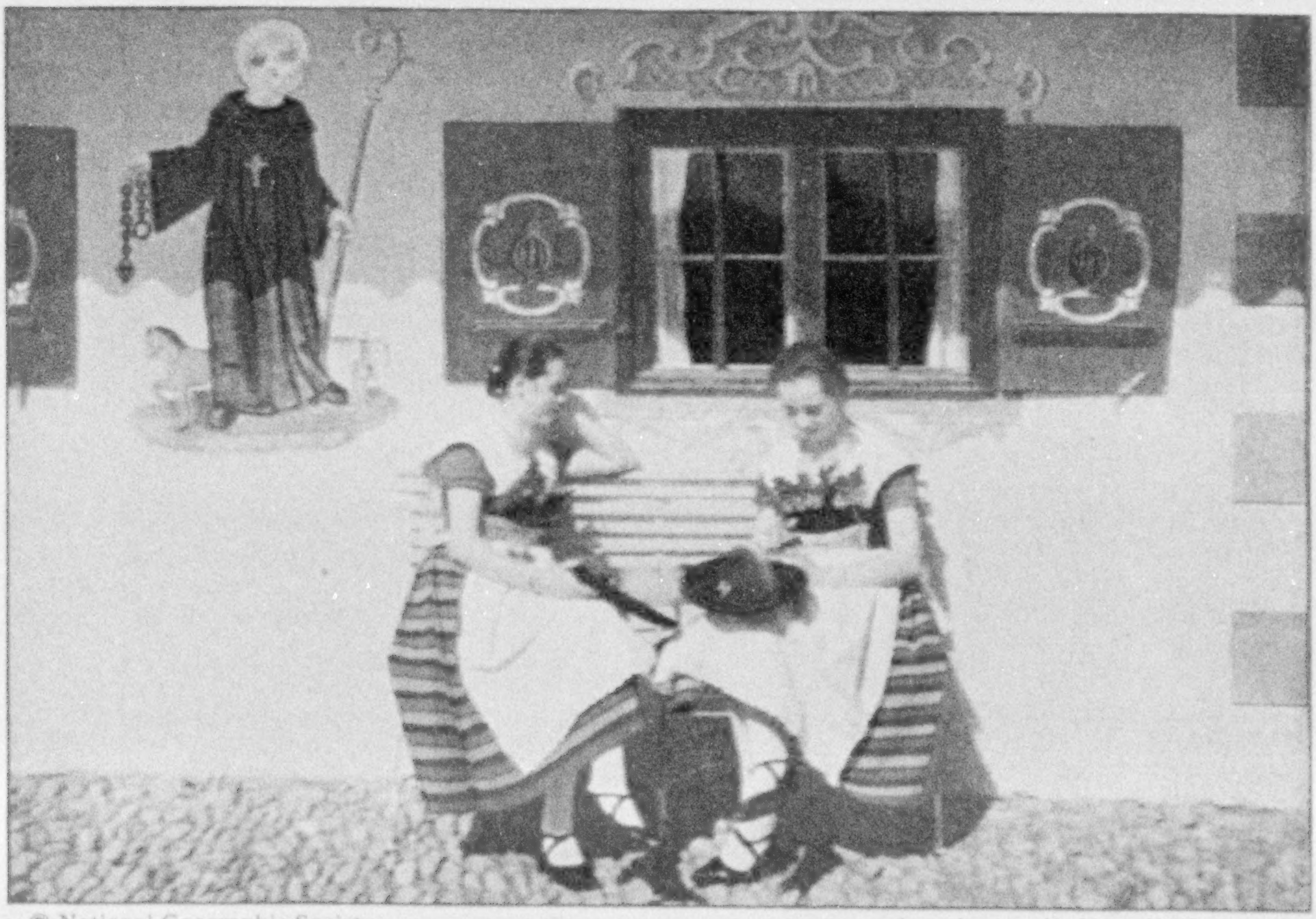
GERMANY'S FINANCES

All the reconstructive and creative endeavor outlined above costs a lot of money. It behooves us, therefore, to look into Germany's financial situation. How do the Reich's public and private finances stand to-day? The answer is supplied in comprehensive detail by the annual report of S. Parker Gilbert, Agent General for Reparation Payments, published December 17, 1927.



EACH DAY REVEALS TO THEM SOME NEW GLORY OF THE ALPS

For many centuries the town of Berchtesgaden was the capital of an independent principality so tiny that it was said to be "as high as it was wide." Its inhabitants include many skilled toy makers and wood carvers, and these industries, along with rich salt deposits near by, have contributed to the town's continued prosperity.



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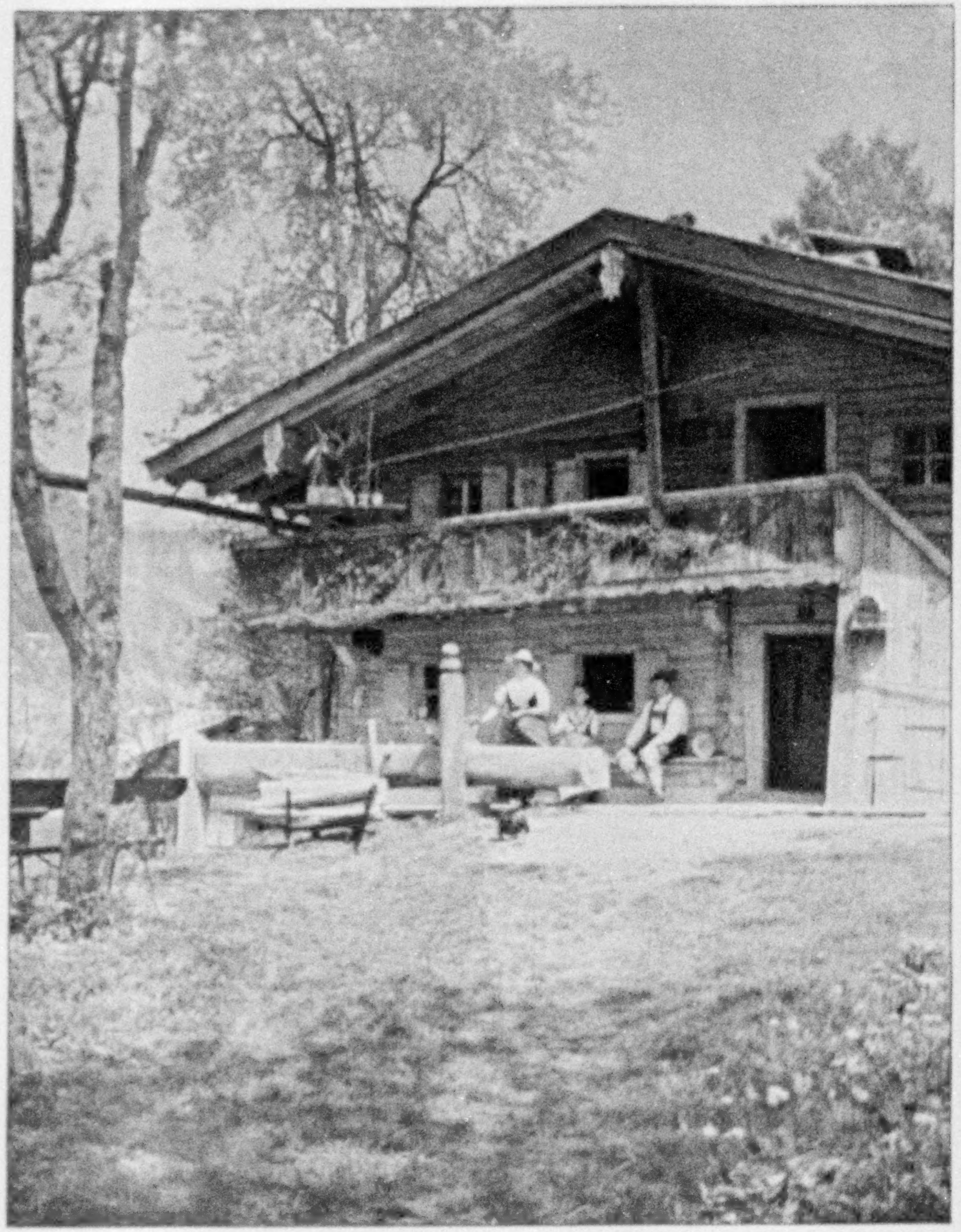
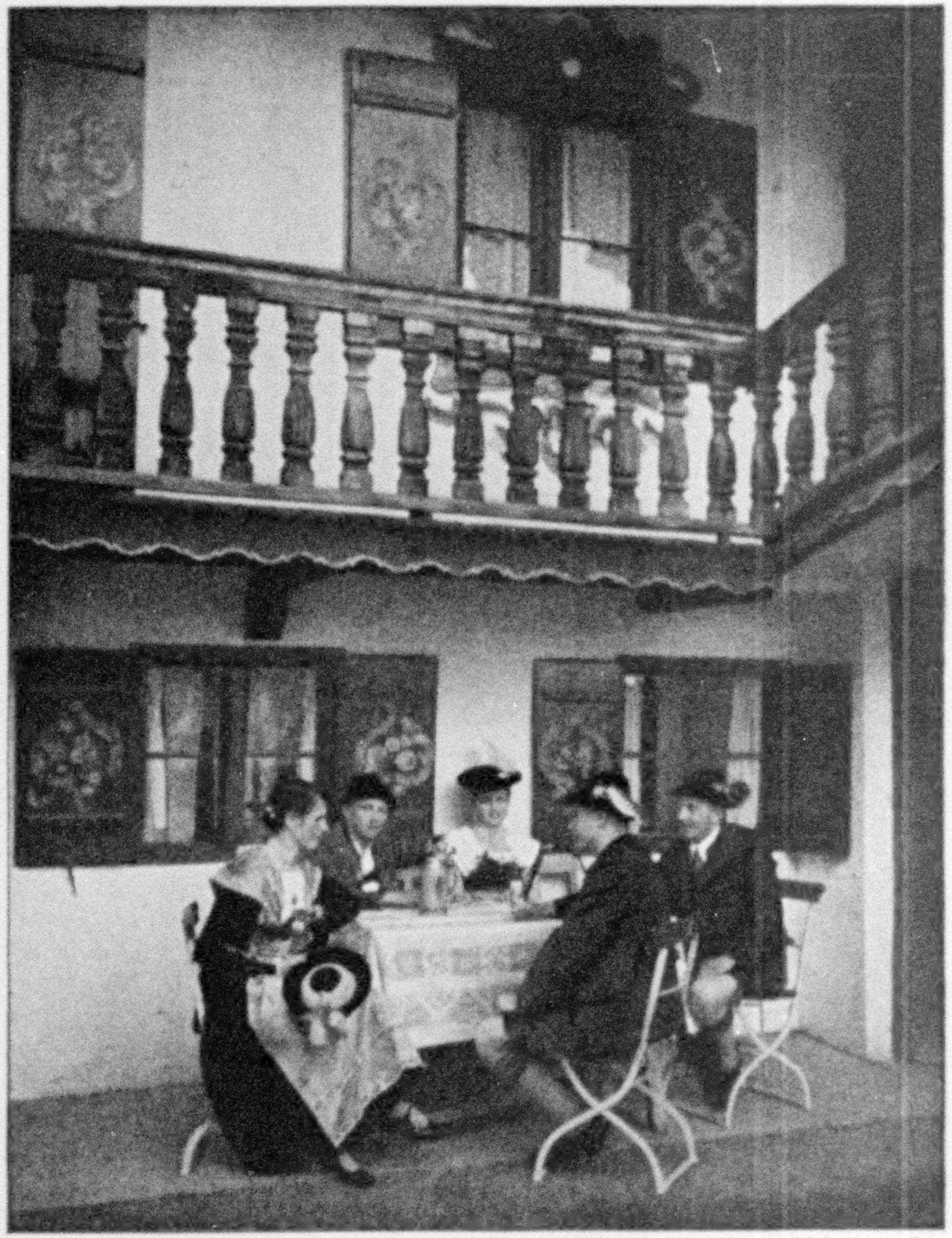
THOUSANDS COME TO ENJOY THE QUAINT CHARM OF TEGERNSEE

The houses of this interesting town are made chiefly of stone covered with smooth plaster. On the outside walls scenes of religious events and personalities are painted in bright colors. The costumes worn by the young women add materially to the town's attractiveness as a summer resort.





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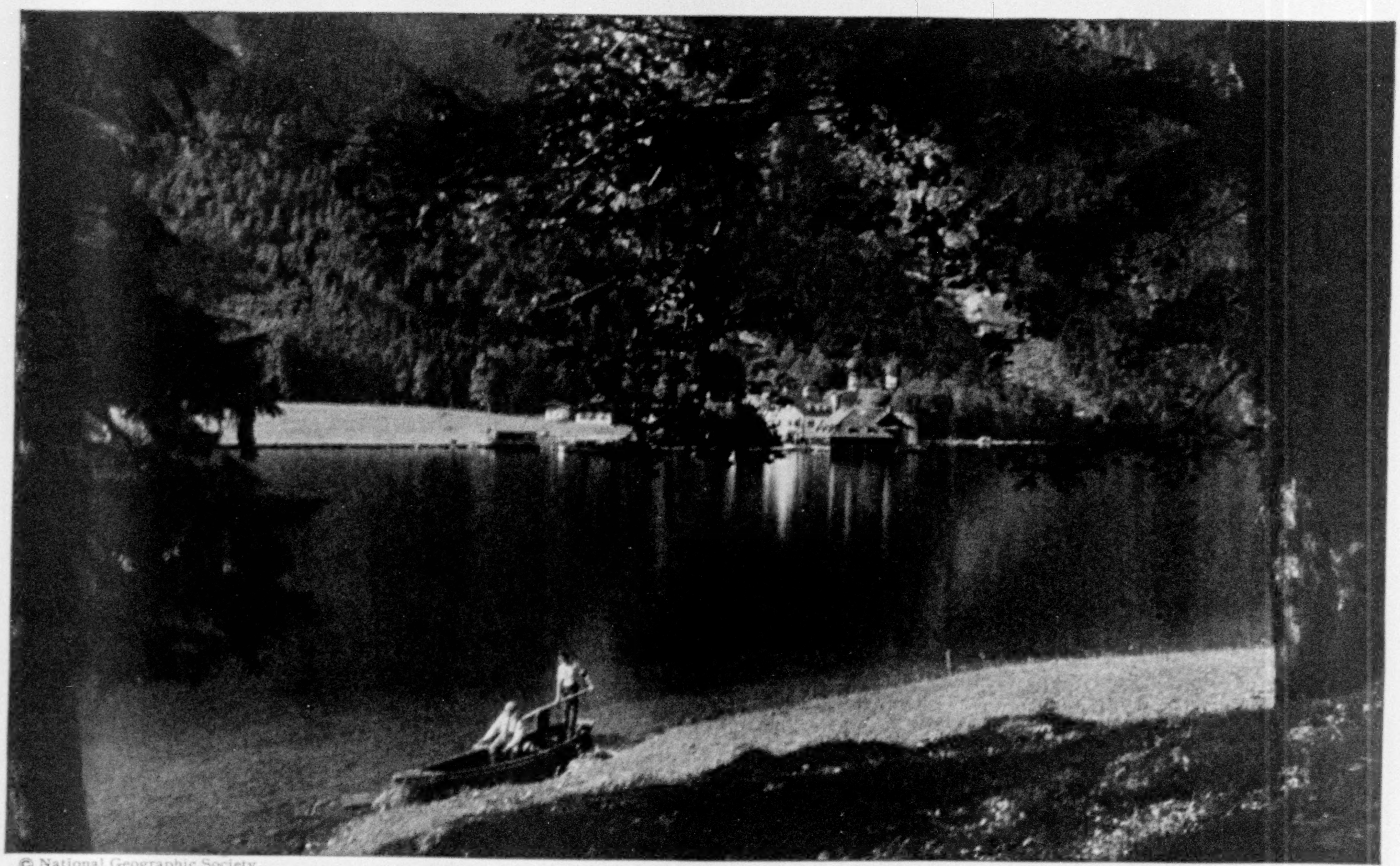
THE SETTINGS OF REAL LIFE FREQUENTLY ASSUME A COMIC-OPERA ASPECT IN BAVARIA

The chalet type of dwelling found in Switzerland also occurs in the mountains of Bavaria. These very practical and industrious people work hard in summer on their few but fertile Alpine acres. During the long winter months they produce masterly bits of wood carving.

What might easily pass for a scene in a theater is in reality a group of Tegernsee's young people enjoying a social evening hour in front of one of their homes. In centuries past the Benedictine Monastery of Tegernsee was one of the great cultural centers of Europe.



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FROM THE EDGE OF KÖNIGSSEE'S UNRUFFLED GREEN DEPTHS RISE SHEER MOUNTAIN HEIGHTS

From this tiny promontory of St. Bartholomä the traveler undertakes the ascent of the Watzmann, a peak which in local legend personifies a cruel ruler of Berchtesgaden who one day wantonly set his dogs upon a peasant woman and her baby. As the dogs tore at the child, the ruthless monarch trampled the distracted mother beneath his horse's hoofs. Her husband, a helpless witness to the tragedy, called down the curse of Heaven on the monster. Immediately there was a terrible earthquake and King Watzmann was turned to stone, where he remains to-day, a warning to all cruel men.

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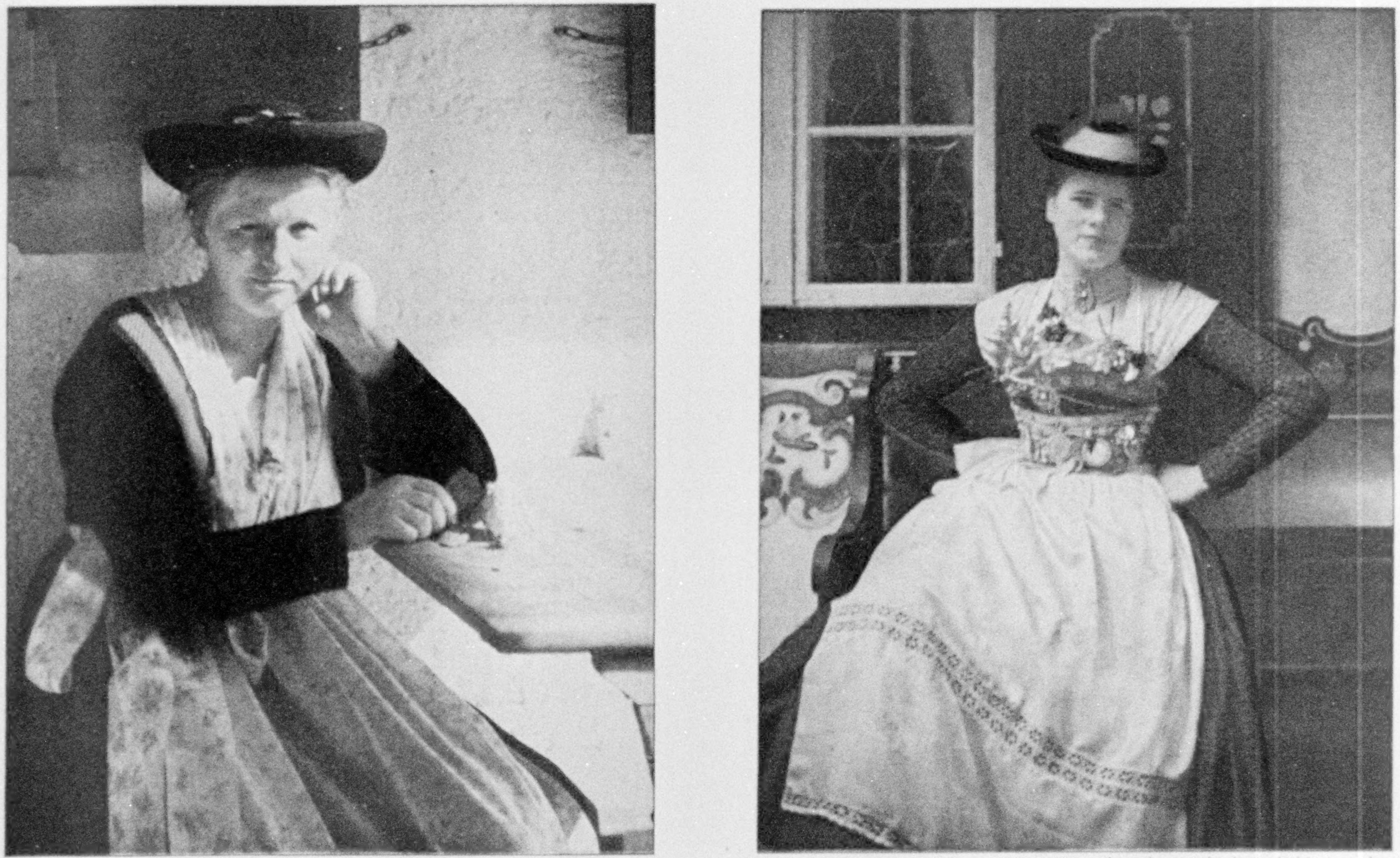
"WE WELCOME YOU TO TEGERNSEE"

Autochromes by Hans Hildenbrand

TOY MAKERS OF BERCHTESGADEN



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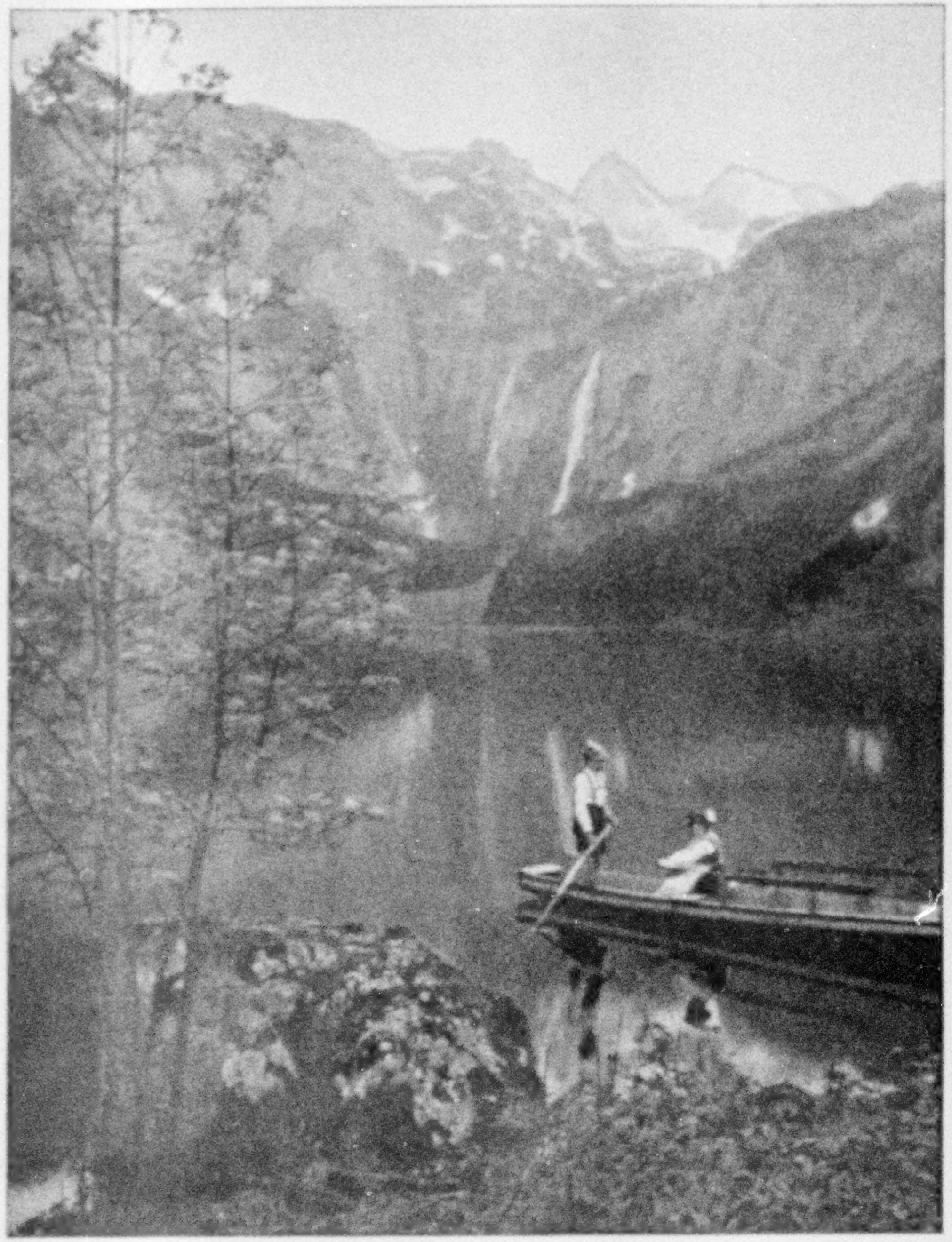
COSTUMES THAT RECALL THE EARLY NINETIES

Such styles are not to be found now in the larger Bavarian towns, but in the mountain villages they still persist. Many an American family album contains pictures which show mother as a dashing débutante wearing similar millinery. The young woman at the left is from Berchtesgaden; she at the right is a peasant of Schliersee.



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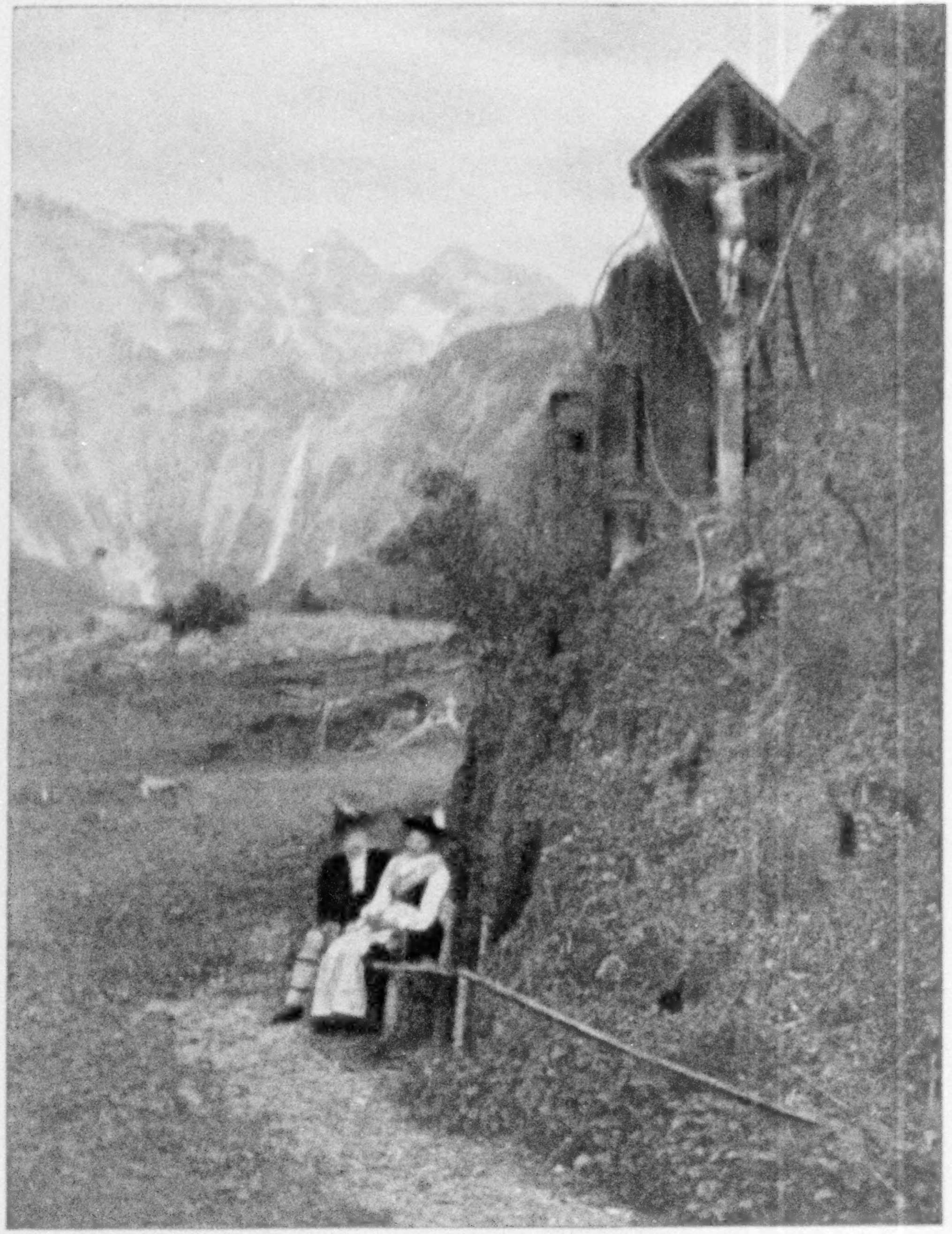
JAGGED PEAKS AND MAGNIFICENT CASCADES REFLECT THEIR BEAUTY IN THE OBERSEE



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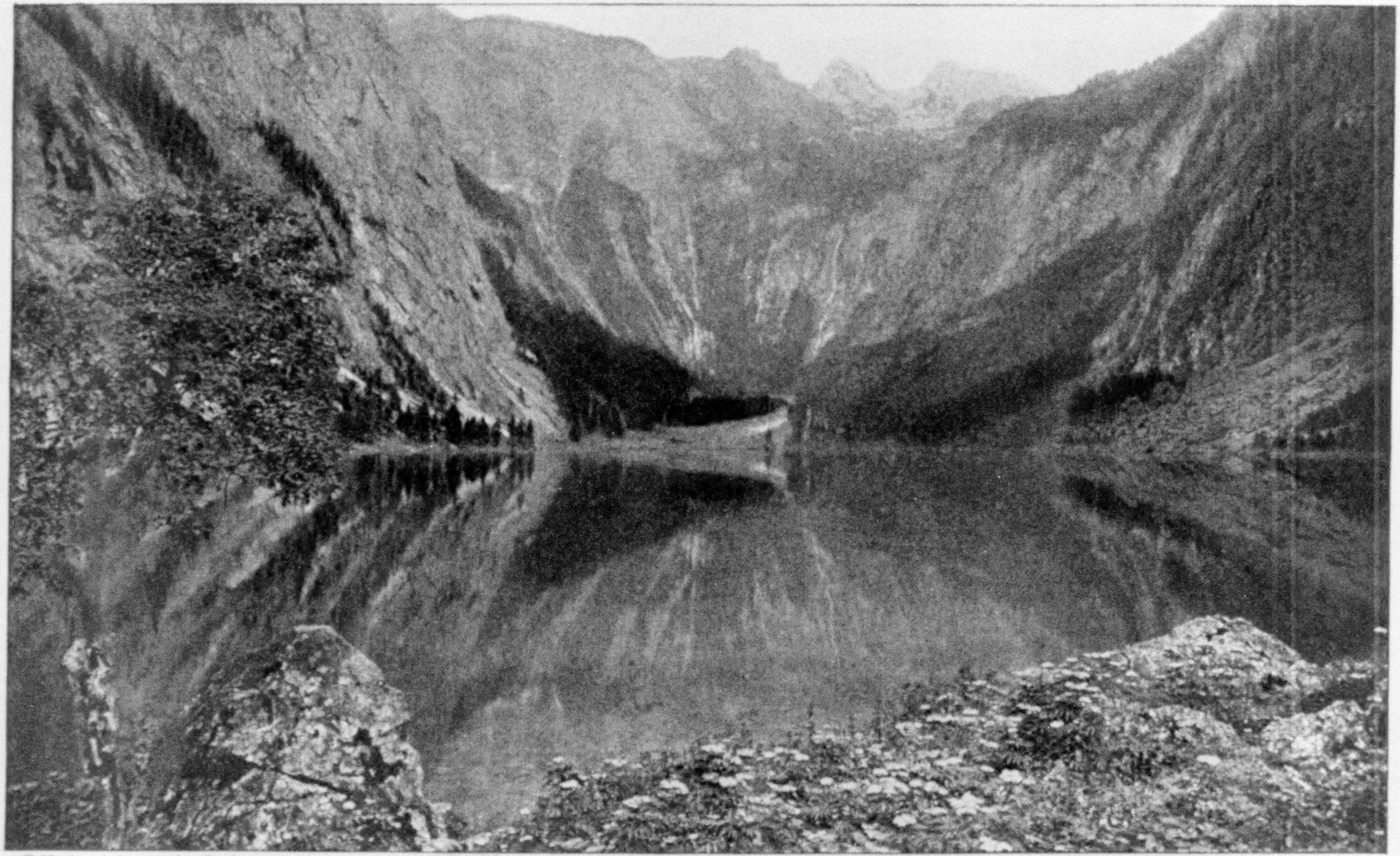
A WAYSIDE SHRINE OFTEN MARKS THE SPOT OF A FATAL MOUNTAIN ACCIDENT



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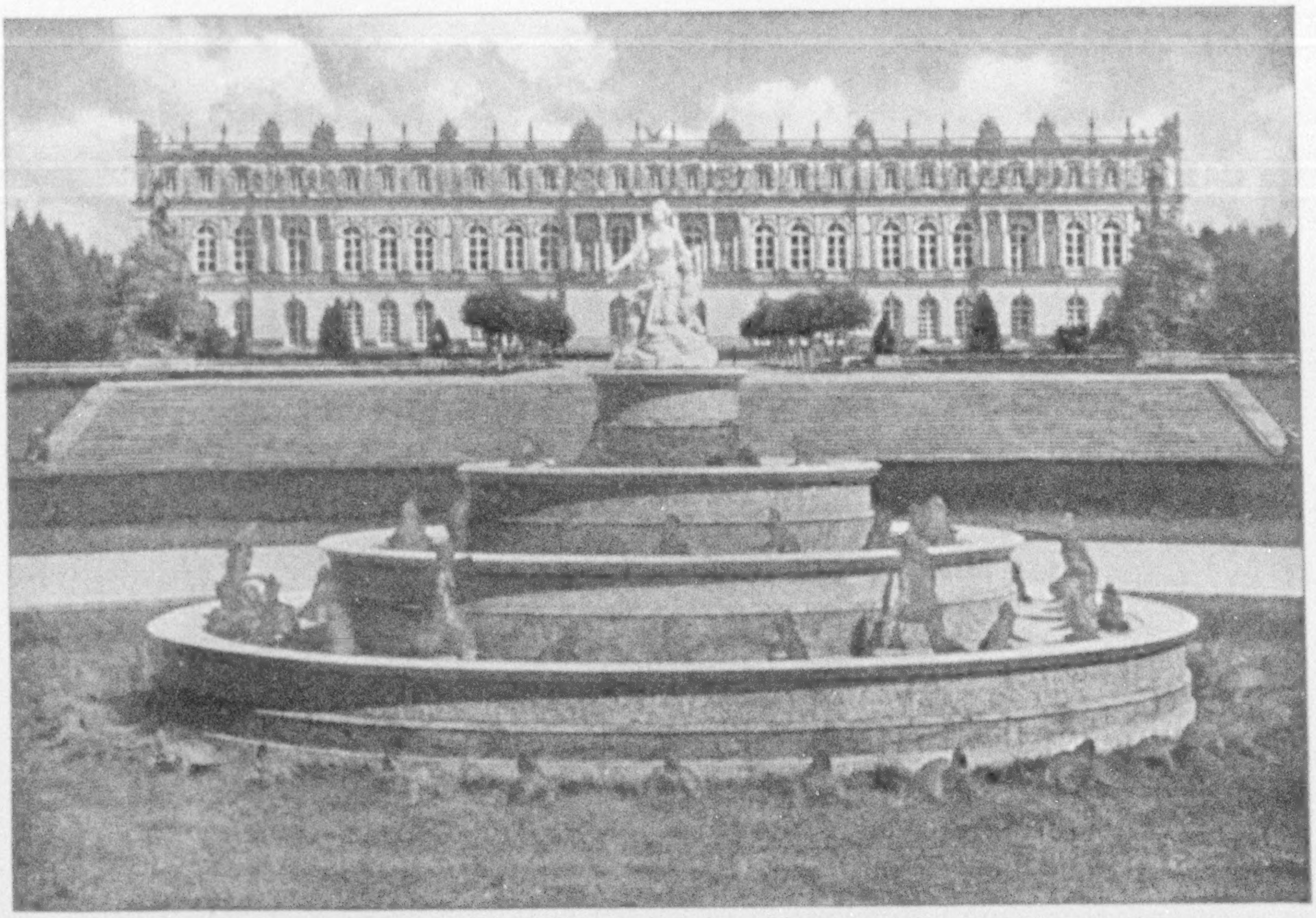
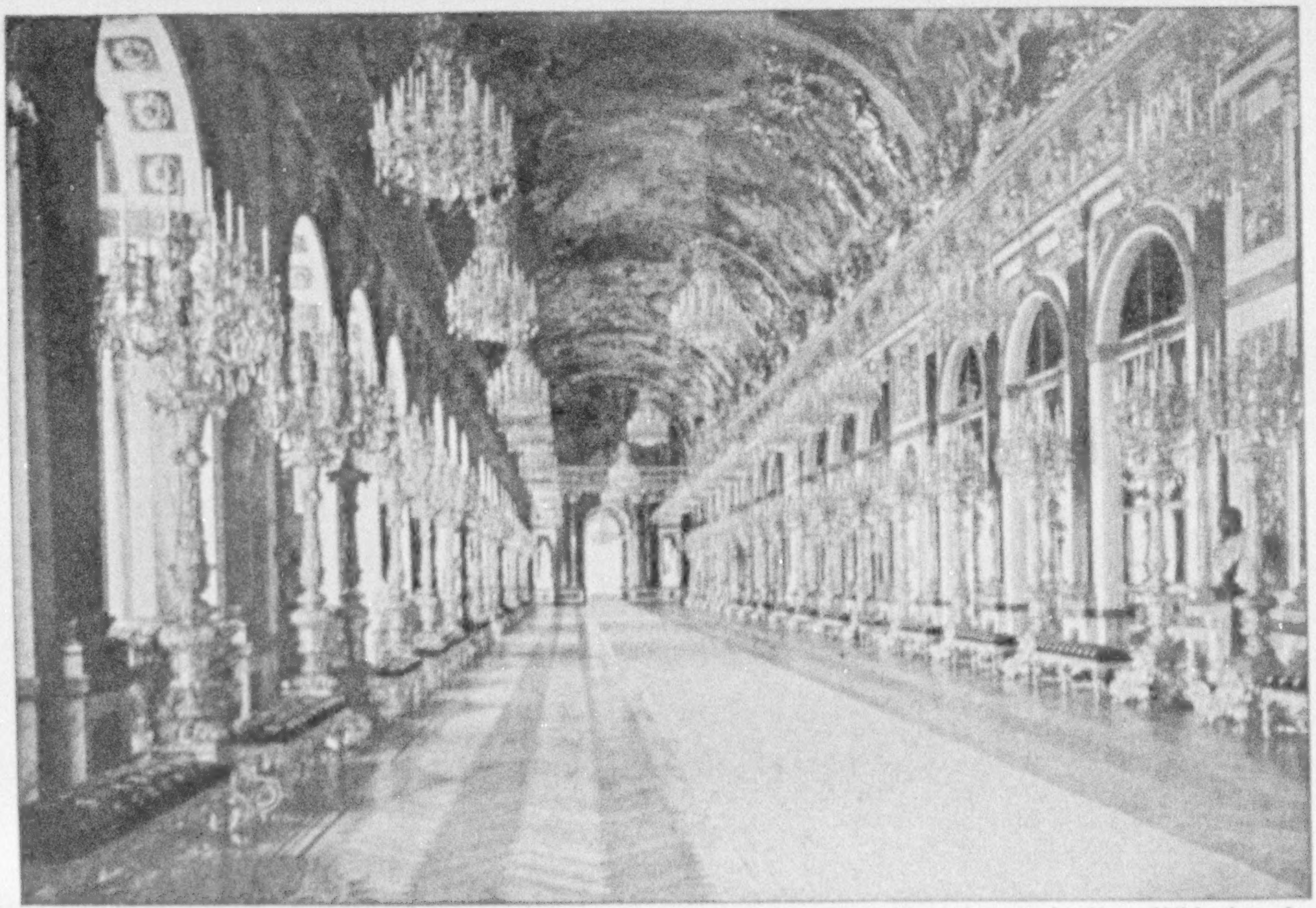
WILD CRAG AND SNOWY CREST ENCOMPASS LONELY OBERSEE

An avalanche which cut off an arm of the Konigssee was responsible for the formation of this Bavarian lake, which in natural beauty is the equal of any other in Europe.



LUDWIG THE SECOND BUILT HIS PALACES AS SYMBOLS OF THE MIGHT OF KINGS

An isolated islet in the Alpine Chiemsee was chosen by the King of Bavaria as the site of this magnificent building project.



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BAVARIA'S MAD MONARCH LAVISHED WEALTH ON HERRENCHIEMSEE

Although he nearly brought his kingdom to bankruptcy, Ludwig II was a true artist and left to his people a heritage of great value. The demented ruler knew no restraint in building and adorning his palaces and dared to decorate as no sane man would have done. One of the great halls at Herrenchiemsee is surrounded by mirrors 30 feet high and lighted by 2,500 wax candles set in 77 chandeliers of crystal and gold.

This survey of German economic affairs during the last three years shows that Germany, both publicly and privately, has been borrowing and spending too much money. It also demonstrates, however, the basic soundness of her financial position in respect to her governmental needs as well as to the requirements of her commerce and industry.

Condensed to its simplest terms, Germany's financial status is as follows: Under the Dawes Plan, she paid during the year ending August 31, 1928, the sum of one billion seven hundred and fifty million marks (about $416,600,000) in war reparations to the Allied Powers, and every year thereafter (for a period not limited by the plan) she is to pay the so-called normal annuity of two and one-half billion marks (about $600,000,000). This includes the service of the Dawes loan.

Her national debt outside of reparations, but including the Dawes loan of more than nine hundred million marks, aggregates eleven billion marks, of which eight billion is owed by the Reich and three billion by the States and communes. Outside the Dawes loan, the Federal, State, and communal governments, German church organizations, and private corporations or individuals have contracted foreign loans to a total of five billion three hundred fifty million marks.

It has been found possible to reduce certain taxes. The tax on wages, the lowest class of income tax, has been lowered from 10 to 9 per cent.

This reduction, which covers annual incomes below eight thousand marks, applies only to married persons. Celibates still pay 10 per cent. Earnings of less than one hundred marks a month alone are exempt, but the exemption practically applies to domestic servants only. The average German business man, earning, say, 12,000 marks a year, is taxed 1,400 marks, or a little more than 10 per cent.

According to the Government's economic authority, taxes in general have risen three times above those levied just before the World War. Indirect taxes are extremely high. They have increased 200 per cent since 1923, but in recent months the only tax that has been augmented is the levy on beer, which is about 20 per cent higher.

The Republic has shown itself extremely generous in pensions, where individuals are concerned. All royal princes who served in the war, and even individuals who, like General Ludendorff, have sought to overthrow the Republican régime by force of arms, are accorded generous pensions, running as high as 16,000 marks a year. Of course, ultimately the pension burden is bound to disappear, but for many years to come it must be a heavy drain on Germany's resources.

The cost of the present German army and navy, small as they are, still represents a very substantial fraction of the budget.

In 1913 the Prussian army, half a million men strong, cost about eight hundred million marks. Thus the annual maintenance of a pre-war soldier came to only sixteen hundred marks, while that of a Reichswehr soldier to-day comes to almost five thousand marks.

Although the diminutive German fleet costs only something more than one hundred million marks per annum, there is much satirical comment to the effect that there are more German admirals to-day than there are battle cruisers.

GERMAN RAILWAY SYSTEM IS THE WORLD'S LARGEST PRIVATE EMPLOYER OF LABOR

When the Allies first began to consider how to get indemnities out of Germany, their eyes turned to her vast network of railroads.

Their first step was the amalgamation of all German railroads, previously owned by various federated states, into one national system. The problem of hitching its profits to the reparations' plow, however, was by no means solved thereby.

The solution finally was found by the Dawes Committee, through whose recommendations rail traffic was taken from the German Government and placed in the hands of a newly created private company, called the Reichsbahn. It turned over to the reparations authorities bonds to the nominal value of eleven billion marks. On these bonds the Reichsbahn must pay into the reparations account, in the normal Dawes year beginning in September, 1928, 5 per cent interest and 1 per cent amortization.

This represents an annual total of six hundred sixty million marks, or more than one-fourth of the standard reparational annuity of two and one-half billion marks.

CITIZENS OF BÜSUM, ON THE SHORE OF THE NORTH SEA, HOLD A BAREFOOT PARADE AT EBB TIDE

There is no reason to doubt the Reichsbahn's payment capacity. It is a going concern, thoroughly efficient and up-to date in its management and equipment. Its board of directors includes a minority of foreign experts representing the Dawes creditors' interests. Its annual receipts aggregate five billion marks and its profits well over the Dawes requirements.

Unquestionably the Reichsbahn is quite as good as Germany's excellent pre-war railroads. In the last two years the system has been overhauled, modernized, and thoroughly "rationalized." When this process began the payroll comprised more than one million employees. Without loss of efficiency, the number has been reduced to seven hundred thousand, which still leaves the Reichsbahn the biggest private employer of labor in the world.

THE ONLY RAILROAD EQUIPPED WITH RADIO TELEPHONE

Far-reaching improvements in both the stationary equipment and rolling stock have been put through. More than 621 miles of track are now electrified and great progress is being made in the extension of these stretches. This does not include the electrification of the local and suburban railways encircling Berlin.

German passenger trains are both faster and more comfortable than they were in 1914.

New and more luxurious sleeping and dining cars have been installed.

On the fast Hamburg-Berlin Express the only railroad radio telephone in the world functions daily, enabling travelers to converse from the train with all parts of the country. The speed of both passenger and freight trains has been greatly increased; the running time from Berlin to Cologne, for instance, has been cut from ten to eight hours.

Thirty-six per cent more freight cars are available than in 1913, and in November, 1927, the average daily number of such cars in operation was one hundred eighty thousand, which constitutes a high record.

Enormous sums of money are being spent by the Reich and the States in the construction of canals and roads. The Rhine-Danube Canal is being rapidly pushed to completion. With its opening the city of Cologne will dominate all water traffic between eastern and central Europe

Photograph from Otto Haeckel

WALKING IS THE MOST POPULAR FORM OF OUTDOOR EXERCISE IN GERMANY

Outfits for the pedestrian are seen in every sporting goods exhibit. Every town has its walking club of "Pathfinders," or "Wandervögel." They often make long marches, days in extent, camping at night by the roadside. Here is a girls' walking club, singing as it marches.

and the west European countries. Duisburg, at the confluence of the Rhine and the Ruhr, claims to be the biggest inland harbor on earth.

GERMANY LEADS ALL EUROPE IN COMMERCIAL AVIATION

There is nothing in the field of transportation—perhaps nothing in any other field of endeavor — of which renascent Germany is more proud than her commercial air service.

No other nation can vie with Germany to-day in the aërial transportation of passengers and freight. At a cost approximating that of first-class railroad fare, one may traverse more than a score of European countries in German planes flying daily over regular routes with time-table precision.

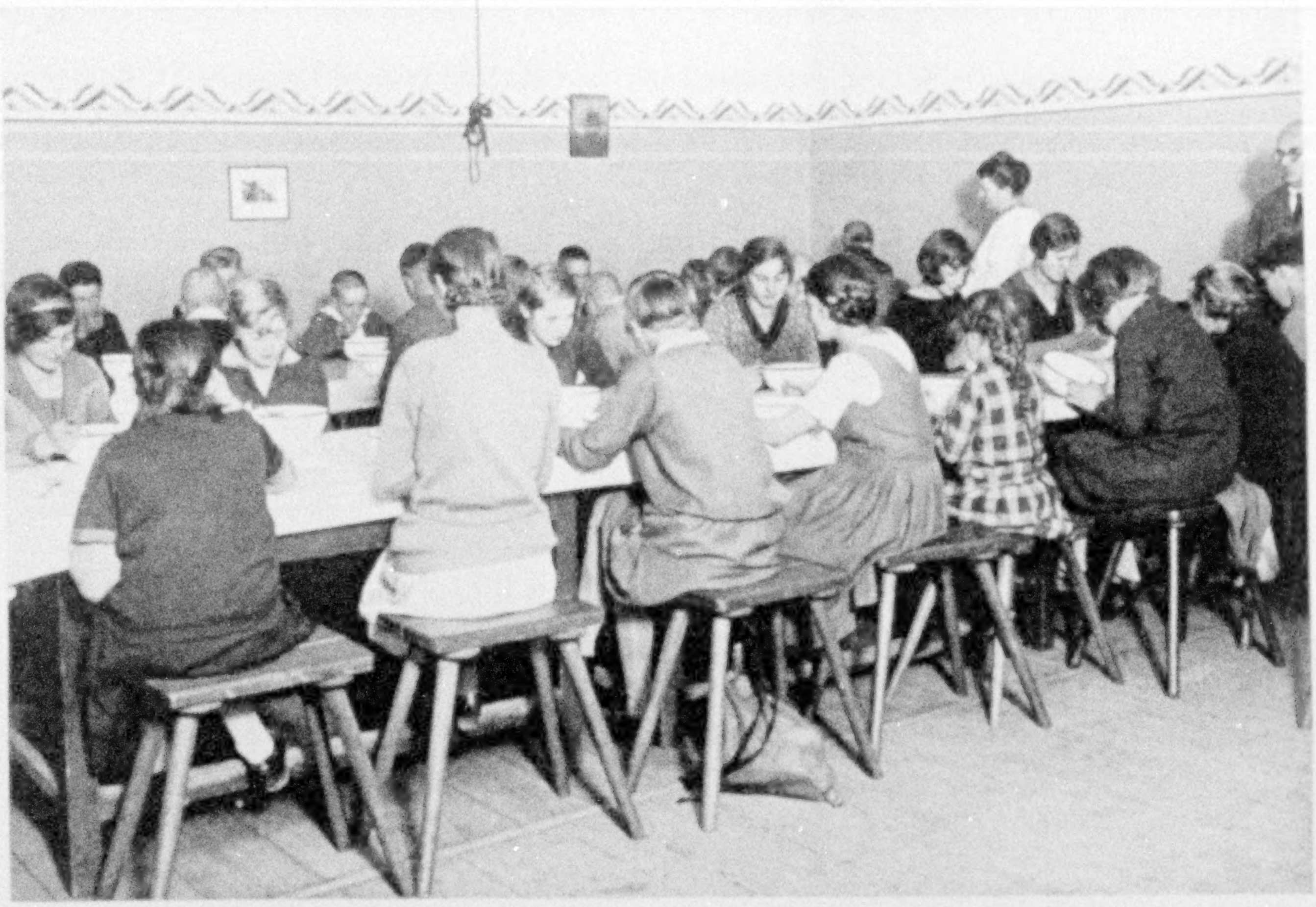
Thanks to the extraordinary energy of the Lufthansa, or German Air Trust, Berlin has been linked in the air with almost every other big city in Europe. During the last flying season 36 Lufthansa planes rose from or landed on the Tempelhof Field, the German capital's vast airport, every 24 hours. In 1927 they carried 102,681 "flight guests," as their passengers are politely called; 1,413,163 pounds of freight, 1,812,200 pounds of baggage, and 1,058,219 pounds of mail.

They flew a total of more than 5,592,000 miles. Their performance over that of the previous year represented an increase of 82 per cent in passengers, 148 per cent in freight, and more than 50 per cent in distance flown.

GERMAN AIR TRAVEL SAFETY RECORD

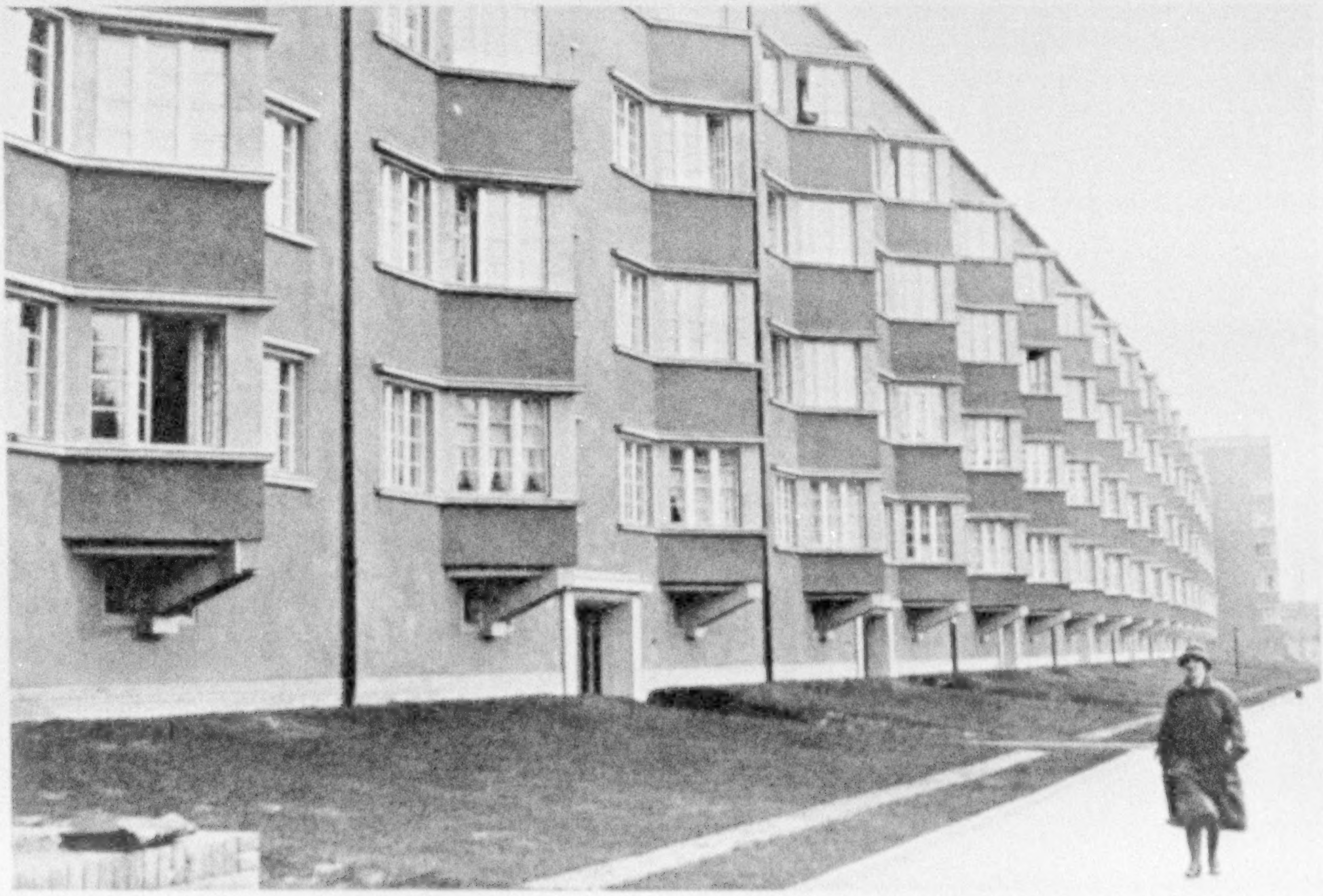
This achievement was accomplished almost without accident. Throughout the entire year there were only two fatal crashes, costing a dozen lives — among them, unfortunately, that of Baron Ago von Maltzan, German Ambassador to the United States. Statistics show that the Lufthansa service enjoys the record of as high a percentage of safety for its passengers as do the admirably managed German railroads.

Already one can sleep and eat quite comfortably aboard the bigger planes.



BERLIN PROVIDES A SPECIAL LOW-PRICED HOTEL FOR ITS HOMELESS GIRLS

This municipal shelter for impoverished youth has accommodations for 200 children. A night's lodging costs only ten cents. Breakfast is five cents, lunch and dinner are six cents each.



Photographs by Wide World

FOR YEARS AFTER THE WAR GERMAN CITIES WERE OVERCROWDED

Few new dwellings were built. Farm people flocked to cities. To shelter the surplus, the Government took charge, and often householders found strangers forcibly quartered on them. A modern Berlin apartment house, built to help meet the dwelling shortage.

The flight guest is motored without extra charge to and from the airport. His baggage is deposited on board without any fussing about porters and tips on his part. If he crosses a frontier, the customs examination takes place, with a minimum delay, on the flying field itself.

On a long flight—from Berlin to Paris, London, or Moscow—meals will be served to him by a steward.

On some of the newer aircraft he can take a nap afterward on a berth into which, à la Pullman, his padded leather armchair is transformed. He can open his window or keep it closed. And he escapes the grime and jolting inseparable from even the best trains.

Photograph from Ernest Peterffy

STARTING ON THAT LONG, LONG TRAIL, THAT LEADS TO CULTURE

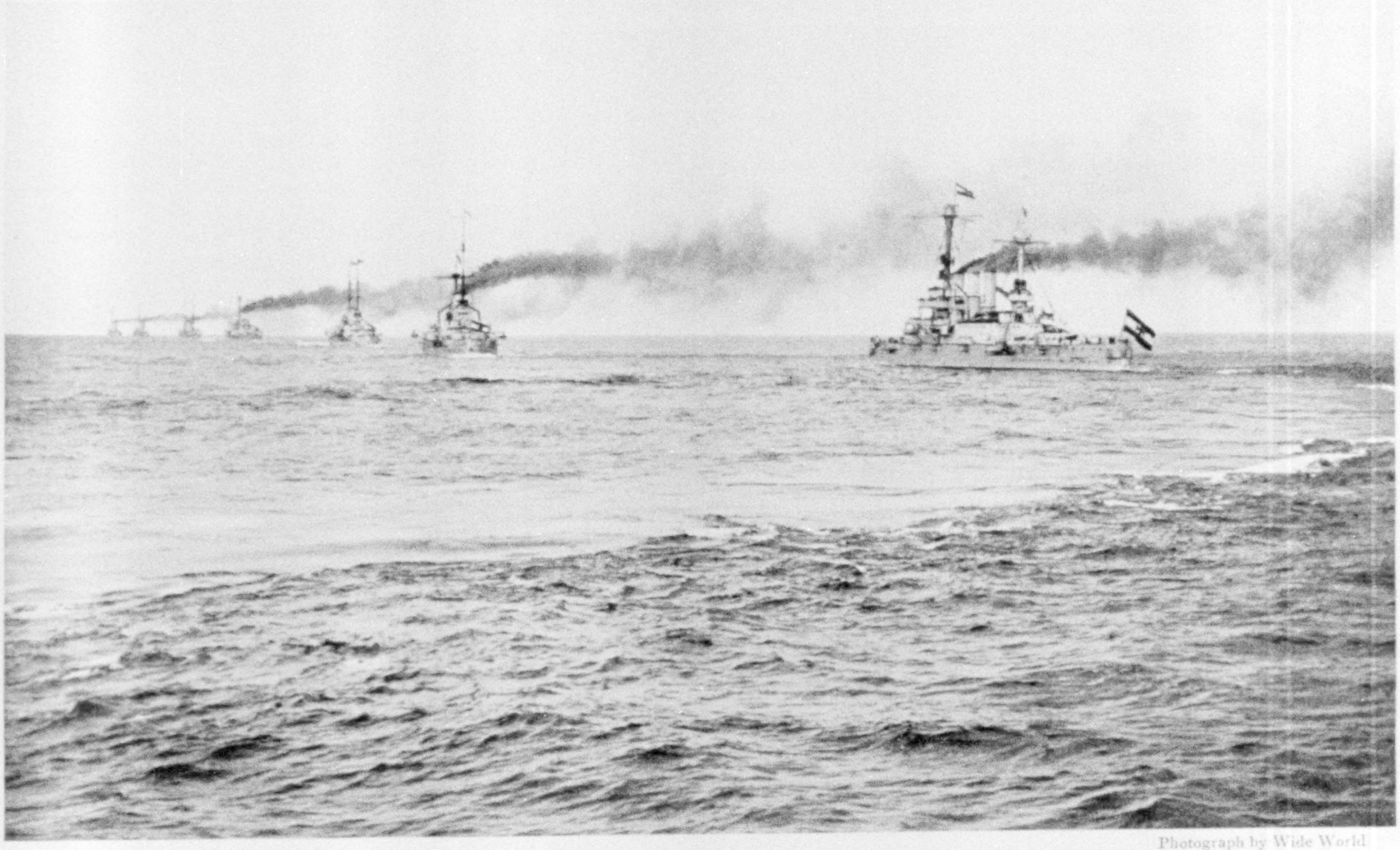
PLANES CARRYING FROM 8 TO 27 PASSENGERS SOLD OUT DAILY

According to the director of the Lufthansa, the day is not far distant when that company will function profitably without the subsidy it now receives from the German Government for carrying mail. Save for that unfortunate minimum of persons who get, or are afraid of getting, "air-sick," most Germans who can afford first-class railroad fare travel by air.

In a recent summer month, when commercial flying was at its height, nineteen thousand passengers patronized the Lufthansa. From May to October almost all the German planes, which carry from eight to twenty-seven persons, are sold out daily. Seats must be reserved days in advance.

All sorts of people travel by air—business and professional men hastening to an appointment in a distant city; theatrical stars rushing from one engagement to another; diplomats, among them frequently the American Ambassador to Berlin, Dr. Jacob G. Schurman; newspapermen; and ordinary travelers not particularly pressed for time, but flying because they prefer it to a hot railway journey. Once the writer shared a plane from Vienna to Berlin with a family consisting of a small boy, his parents, and the youngster's grandmother. They explained that had they taken the best train, which runs at night, it would have cost them some forty dollars more for sleeping-car accommodation.

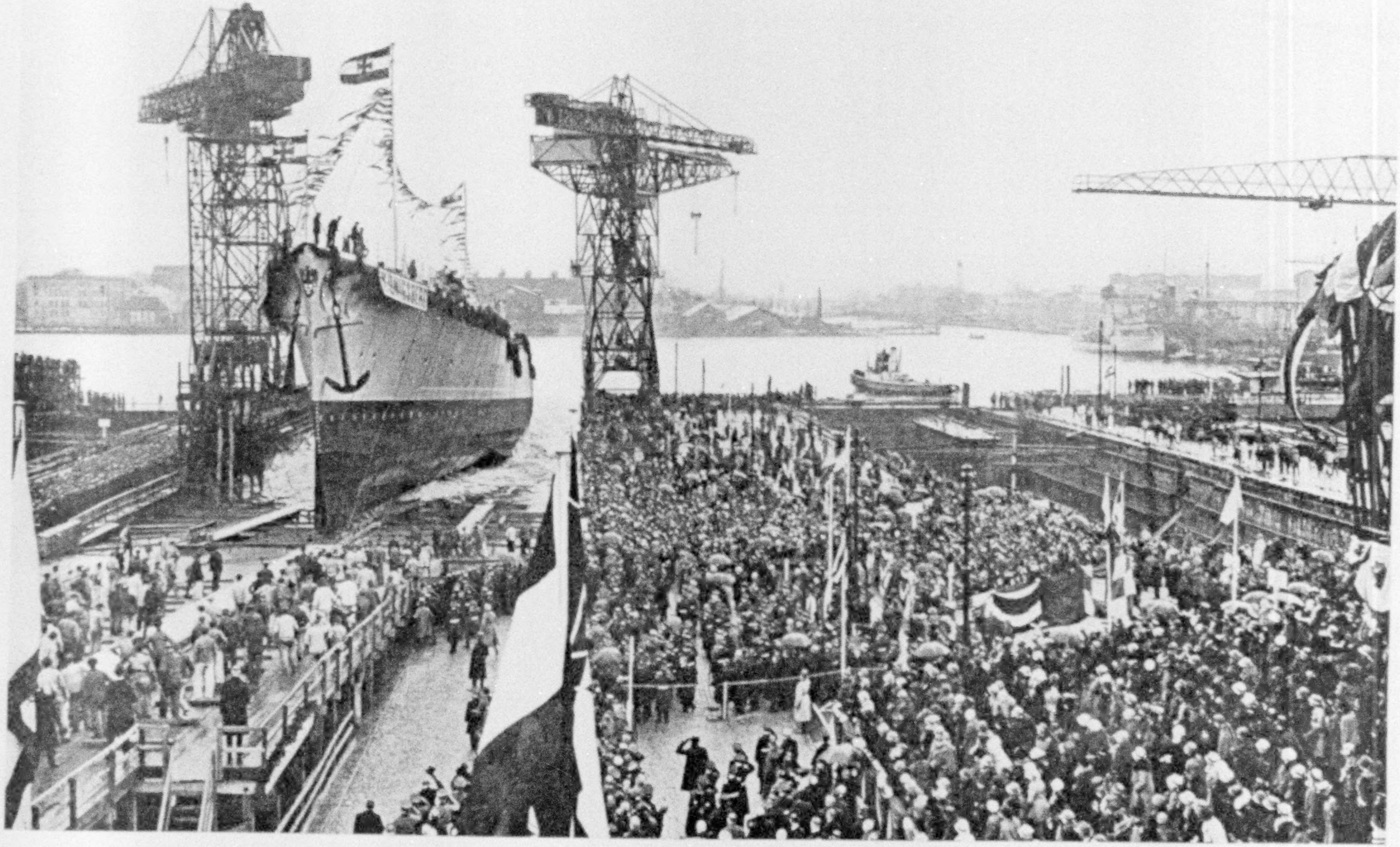
The Tempelhof Airport is one of the sights of Berlin. To it in the summer flock thousands who like to flavor their



Photograph by Wide World

GERMAN NAVAL STRENGTH IS LIMITED BY THE TREATY OF VERSAILLES

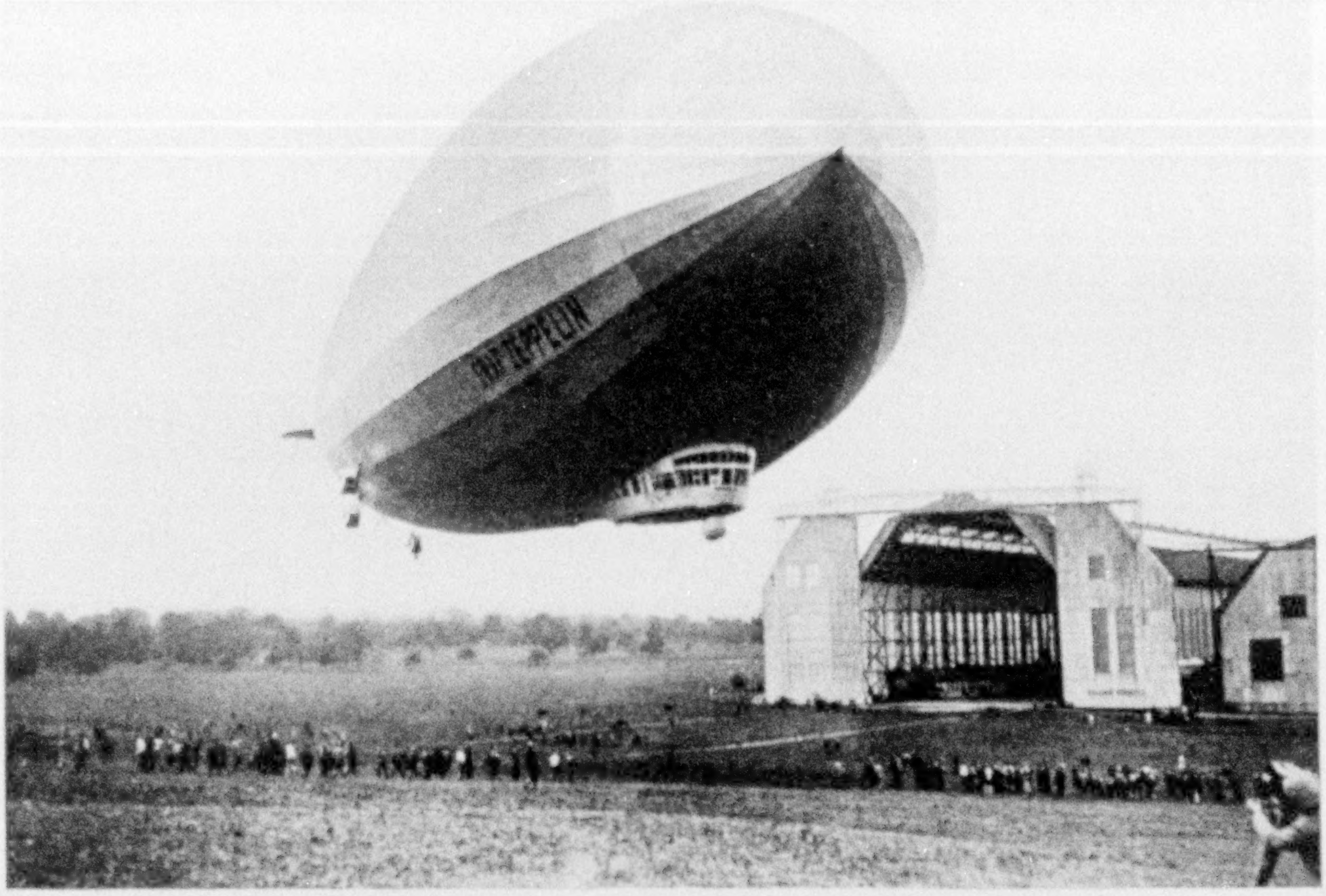
But there is no abatement of the nation's old-time interest in the seagoing life. Since the war not only have the Germans built up their own merchant marine with new ships, but their yards have launched many vessels for foreign customers. These German naval maneuvers were conducted recently in the Baltic.



Photograph by Pacific and Atlantic

A NEW GERMAN CRUISER, THE "KÖNIGSBERG," TAKES THE SEA AT WILHELMSHAVEN

Newly commissioned, with her armament of nine 15-centimeter guns, she is the third German warcraft to bear the name *Königsberg*. She is of 6,000 tons, the highest permitted for cruisers under the Treaty of Versailles. "We now have more admirals than ships," is a current German witticism.



Photograph by Underwood & Underwood

THE LARGEST AIRSHIP IN THE WORLD PASSES ITS TESTS

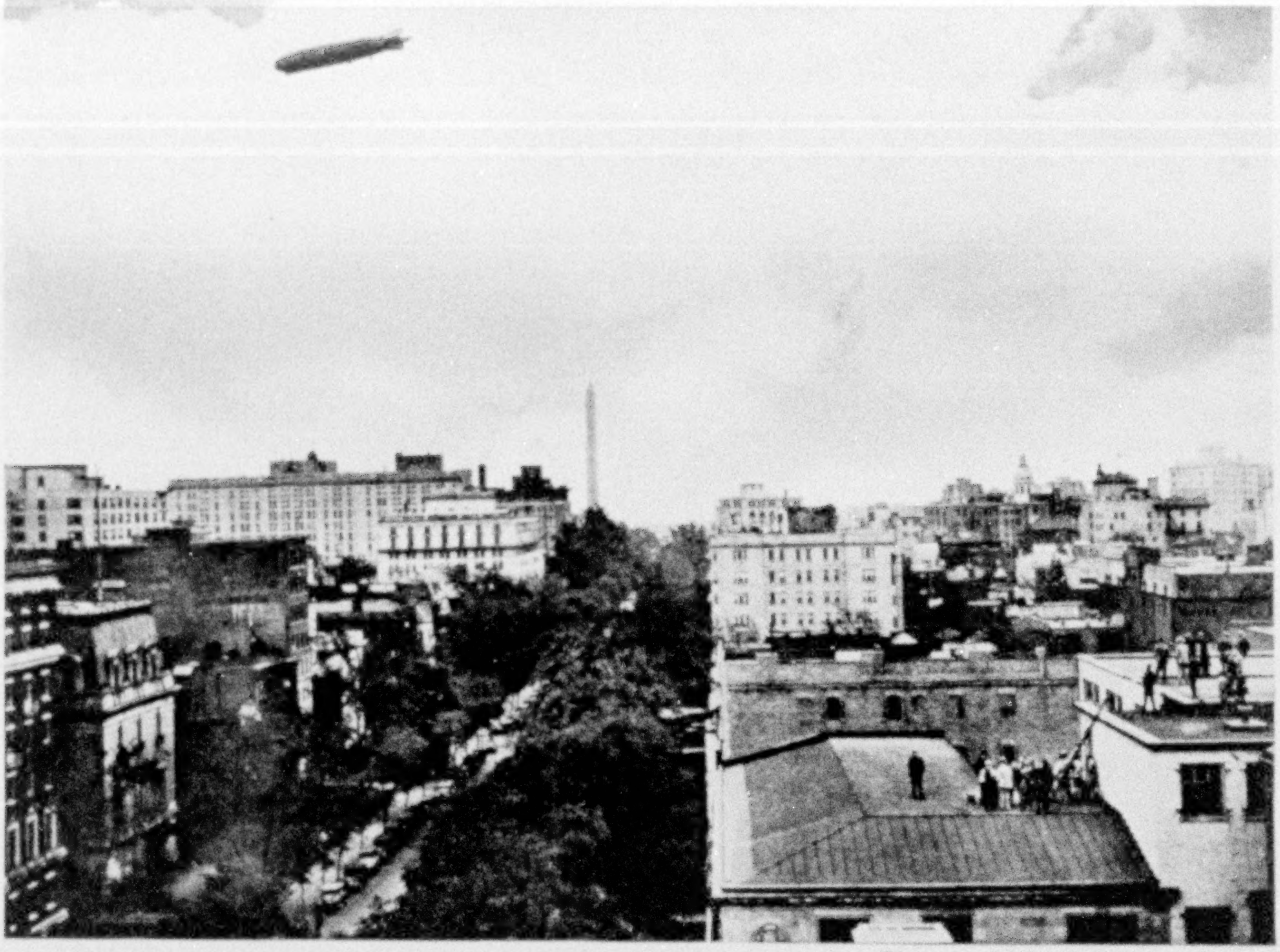
The *Graf Zeppelin*, built for transatlantic service. The photograph shows the dirigible starting on one of its trial flights from Friedrichshafen.

DEUTSCHE LUFT HANSA
H-NACT

Photograph by Wide World

"GEE! I WISH I COULD GO UP!"—OR GERMAN WORDS TO THAT EFFECT

Popular enthusiasm for aviation is intense in Germany, and Government subsidies aid air commerce. An airport at Hamburg.



Photograph by Richard H. Stewart

THE "GRAF ZEPPELIN" FLIES OVER WASHINGTON

Upon the completion of its remarkable transatlantic flight, with 20 passengers and a crew of 40, the great German craft (see illustration on preceding page) flew over the National Capital October 15, 1928, en route to its destination, Lakehurst, N. J. In the right foreground is the roof of the headquarters of the National Geographic Society; in the distance, the Washington Monument.

afternoon coffee with the mild thrill of watching the planes arrive and depart—just as an older generation was wont to assemble at country stations "to see the cars come in."

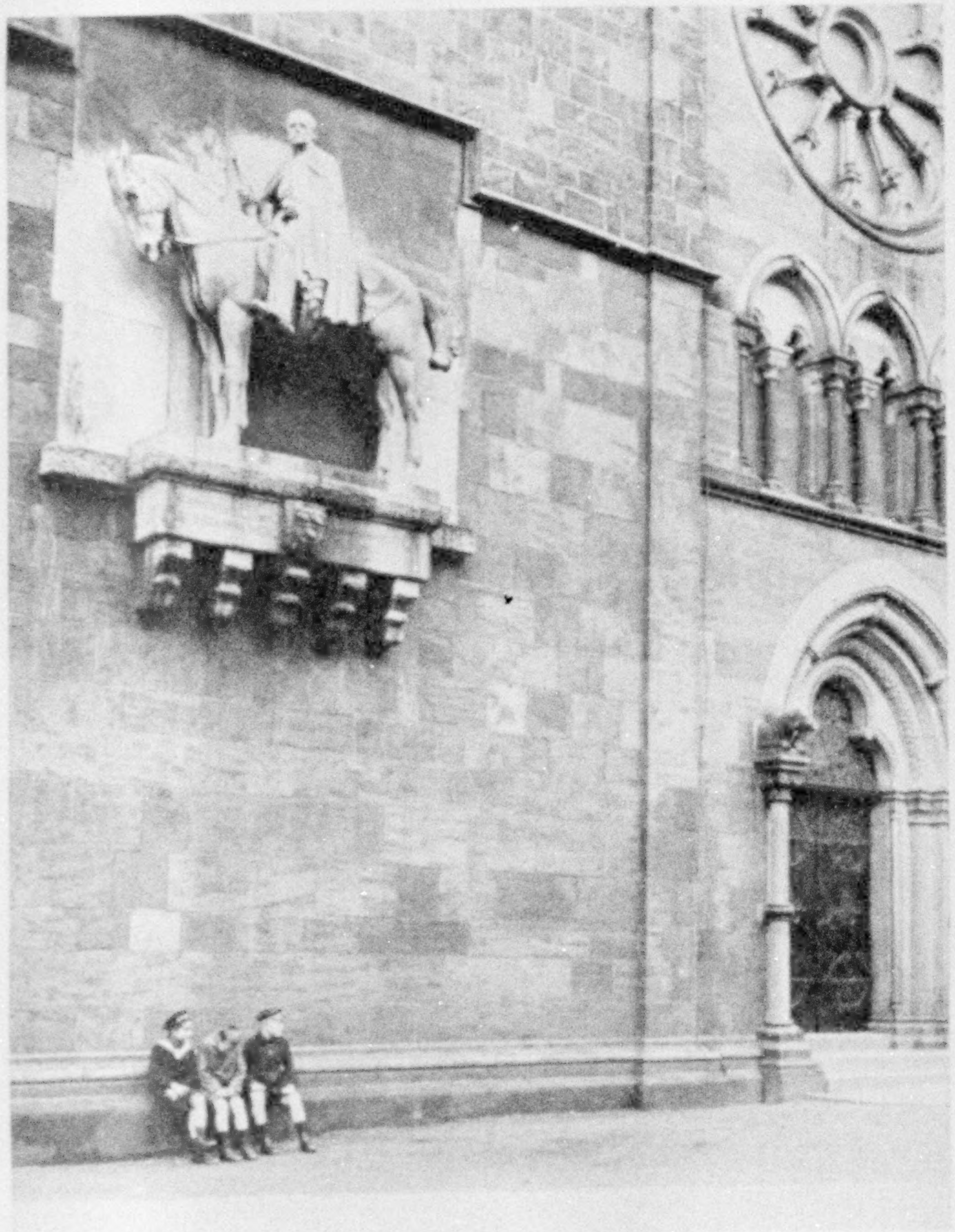
Tempelhof boasts two excellent restaurants and a spacious beer garden, and on special occasions a brass band. A siren sensationally shrieks the advent of an incoming plane—from Stockholm, maybe, or Moscow, or Paris, or Milan. The slim wings drift to earth and a little group of men and women disembark. Early in the morning of that same day they started from the capital of Soviet Russia, by train forty-eight hours away. The more sophisticated spectators compare watches to see whether the plane is on time, and nine out of ten times it is, to the minute.

A decade ago Tempelhof was still only the dusty plain on which the last German emperor had been wont to review his troops. The German Republic had neither airports nor aviation. Military aircraft were forbidden by the Versailles Treaty and civilian planes restricted in size and power.

Despite these handicaps, or maybe because of them, the Germans came to concentrate on commercial airways while other big powers were engrossed in aërial armament.

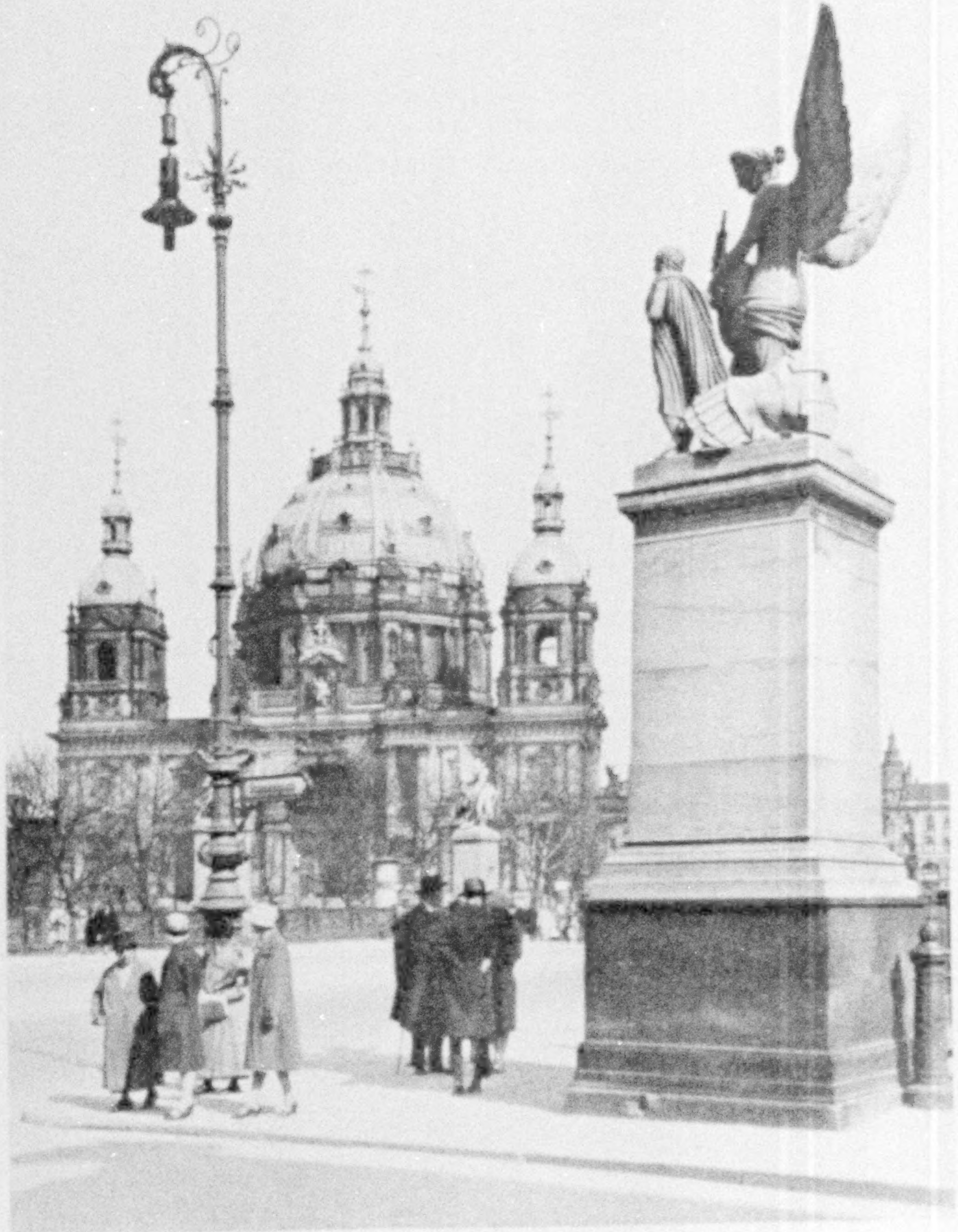
Two companies, the Junkers and the Aëro Lloyd, came to the fore. In 1925 they were amalgamated into the Lufthansa, another of the great German cartels previously referred to. Then the Allied governments rescinded their severe restrictions on German civilian planes, enabling Germany to compete on equal terms with other nations in the skies.

On the high seas German liners again compete successfully with those of the other great powers. In the transatlantic passenger trade between Germany and America the big German concerns are supreme. British and other European lines have been forced to retire from Ger-



VON MOLTKE'S STATUE ON BREMEN'S CATHEDRAL WALL

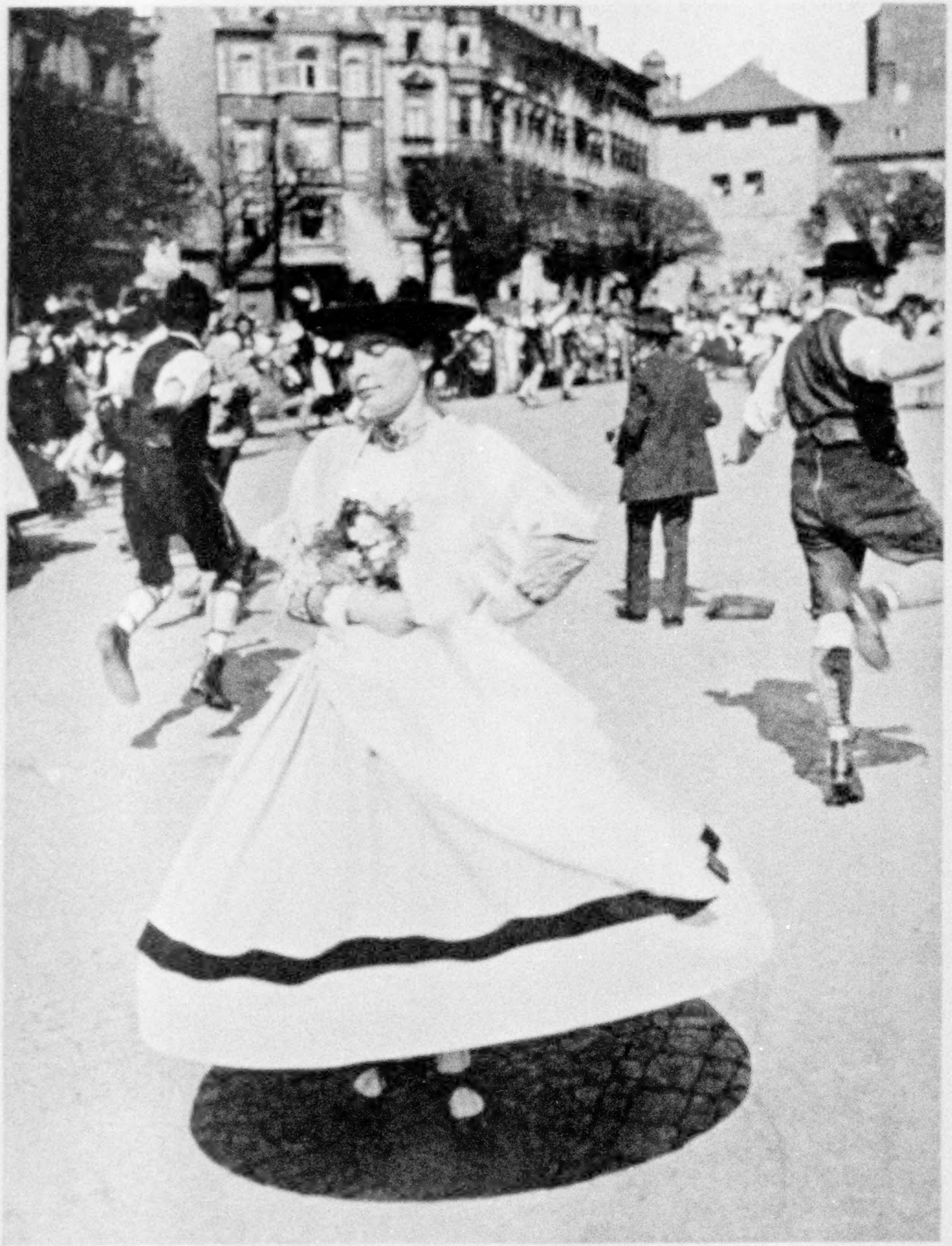
The memory of no man is greener in Germany than that of Gen. Helmuth Carl Bernhard von Moltke, the great strategist, who was for 30 years chief of staff of the Prussian army and who directed the campaigns of 1870. Although an accomplished linguist, he was so habitually reserved that he was said to have been "silent in seven languages."

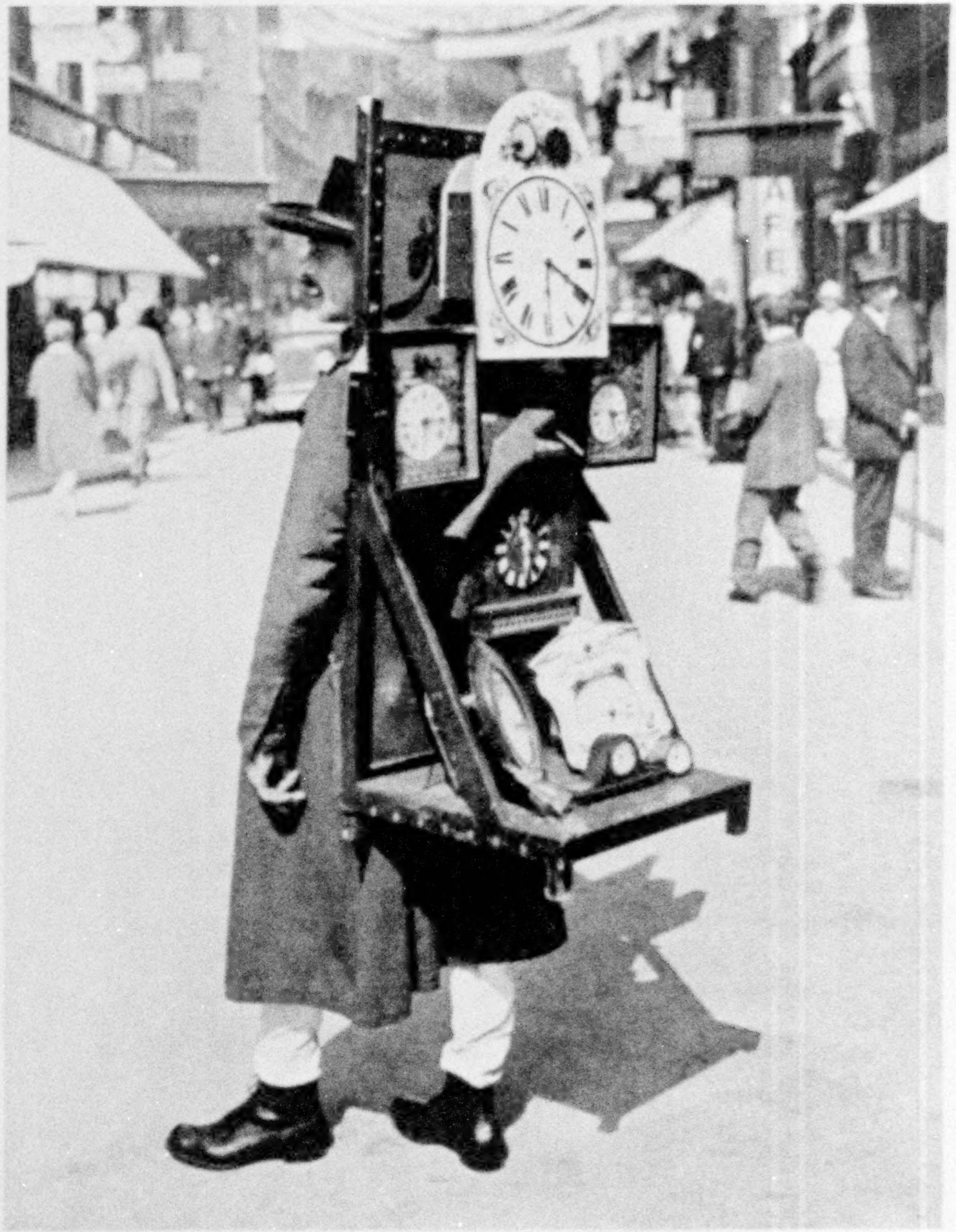


Photograph by Ewing Galloway

BERLIN'S ORNATE CATHEDRAL

Despite the capital's riotous architectural conflicts, it boasts many edifices of great beauty. Opposite the cathedral stands the former royal palace, now converted into a museum of industrial art. Everything of historical interest from the royal residence has been carefully preserved (see text, page 716).





Photographs by Wide World

A DANCE THAT WAS OLD LONG BEFORE JAZZ WAS INVENTED

The two shirt-sleeved men in the background are not running away—they are simply doing a step of their own. These ancient folk dances were staged in the streets of Halle recently for the first time since 1913.

AT LEAST SEVEN OF THESE CLOCKS ARE WRONG

During her big fairs, Leipzig swarms with assorted peddlers. This itinerant clock vendor is from the Black Forest, selling timepieces made in that region. Obviously, he has failed to "set" them.

GERMANY MAKES THE UTMOST USE OF HER CANALS

To an already vast network, the Germans continue to add still more canals. They cut freight costs. A log raft on the East Prussian Highland Canal, with hut of straw for the pilot.

man ports. Only the American vessels of the United States lines maintain their competition with the North German Lloyd in the New York-Bremen service.

While her present total mercantile tonnage (about three million five hundred thousand tons) is still inferior both to her pre-war tonnage (five million three hundred thousand tons) and that of America and Great Britain, Germany has an advantage in that the bulk of her merchantmen are new, and so built along the most modern lines and equipped with the most efficient machinery.

The Ballin class of steamships launched by the Hamburg-Amerika Line in the past four years are splendid liners, offering every comfort to their passengers. Faster and still more luxurious are the huge 46,000-ton vessels being built for the North German Lloyd and designed to compete with the best British and American passenger ships.

The dockyards at Hamburg and Kiel had a banner year in 1927. The number of workers employed increased 50 per cent, and the total orders placed in the year call for the construction of six hundred fifty thousand tons, gross register, or three times the previous year's total and about half of the pre-war figure.

GERMAN PEOPLE, LONG STINTED, HAVE BOUGHT AT AN UNPRECEDENTED RATE

While the rising volume of German exports swells the coffers of the merchant marine, the foreign-trade situation as a whole is regarded as unsatisfactory, because of excess of imports.

This may be attributed to a domestic consumption unprecedented in value.

For years the German people had been stinting themselves. In 1924, when they began earning real money instead of almost worthless paper notes, they started saving again. In the ensuing years conditions became even more prosperous and money, generally speaking, more plentiful.

In 1927, spending set in on a large scale. Persons who had been satisfied with one suit or a couple of dresses a year undertook the replenishment of their wardrobes. The standard of living improved; more and better food was eaten. People bought new furniture and installed pianos, radio sets, phonographs, and other

Photograph by Ewing Galloway

THE HOME OF DRESDEN'S PROUDEST POSSESSION, RAPHAEL'S SISTINE MADONNA

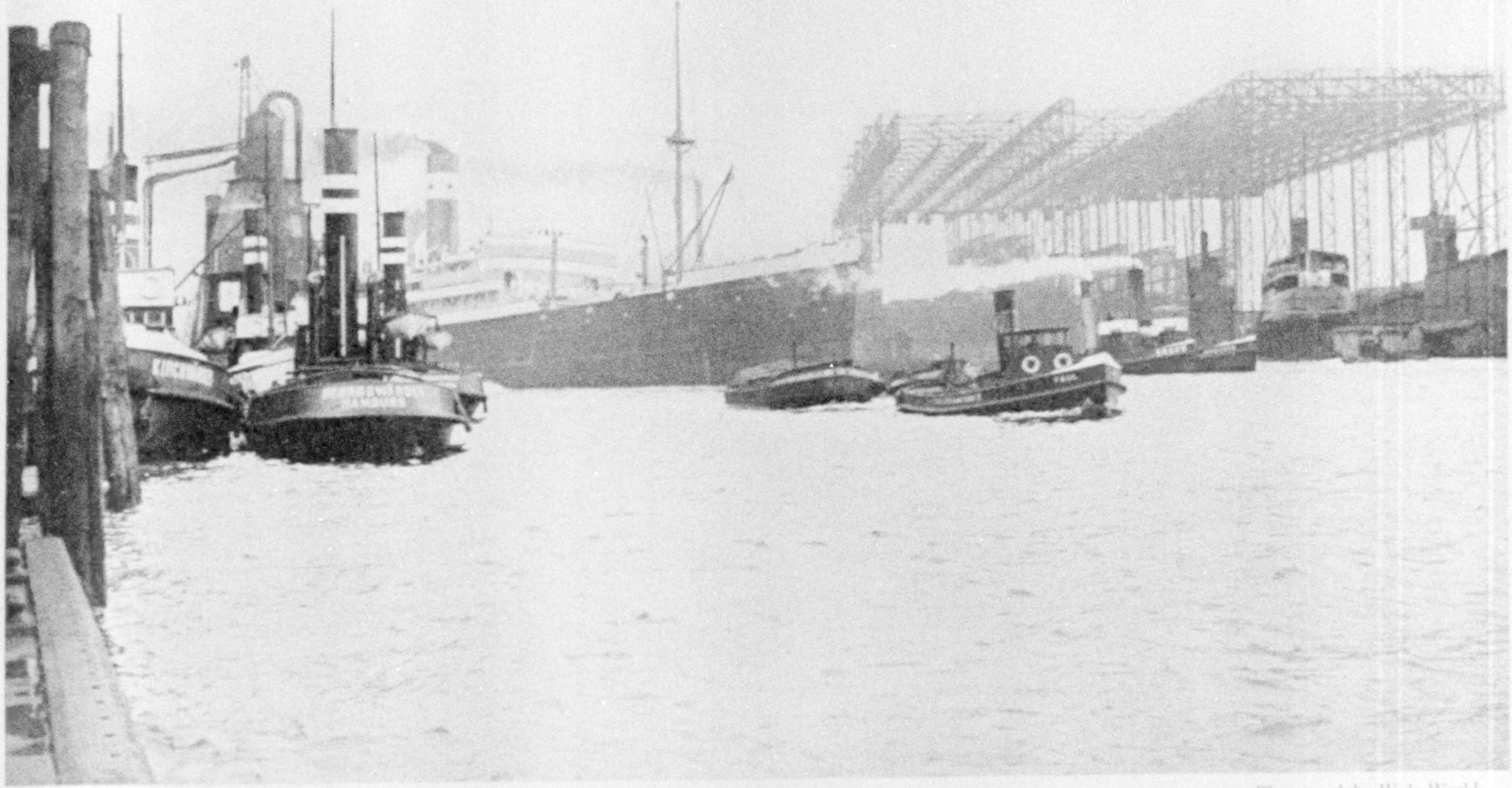
A section of the Zwinger, a group of richly designed galleries, pavilions and gardens, was built by Augustus the Strong, Elector of Saxony, in the early 18th century. He and his son, who succeeded him, made Dresden the art center it is to-day, and included among their acquisitions the Sistine Madonna. According to a local tradition, upon its arrival in Dresden it was hung opposite the throne. However, when the Elector found that the best light fell on his dais he impetuously pushed the throne aside and ordered the picture placed there with the exclamation, "Let there be room for the great Raphael!" The twin towers at the right are those of the Protestant Court Church, dating originally from the 13th century, but in recent years handsomely restored. In the foreground a German sight-seer studies his guidebook.

things regarded as luxuries in Europe. Many thousands of automobiles were acquired by the well-to-do. A large percentage of the cars sold were of American make.

Yet, throughout this orgy of buying, German savings steadily increased, at the rate of about one hundred million marks a month, to a total of about five billion marks, or roughly one-quarter of the pre-war deposits in German savings banks.

Foreign credits, so freely extended to Germany during the last three years, exercised a marked effect on the flood of imports. Industry bought huge stocks of raw materials abroad, and commerce invested liberally in foreign staples and luxuries. Exotic and expensive foodstuffs fairly poured into Germany.

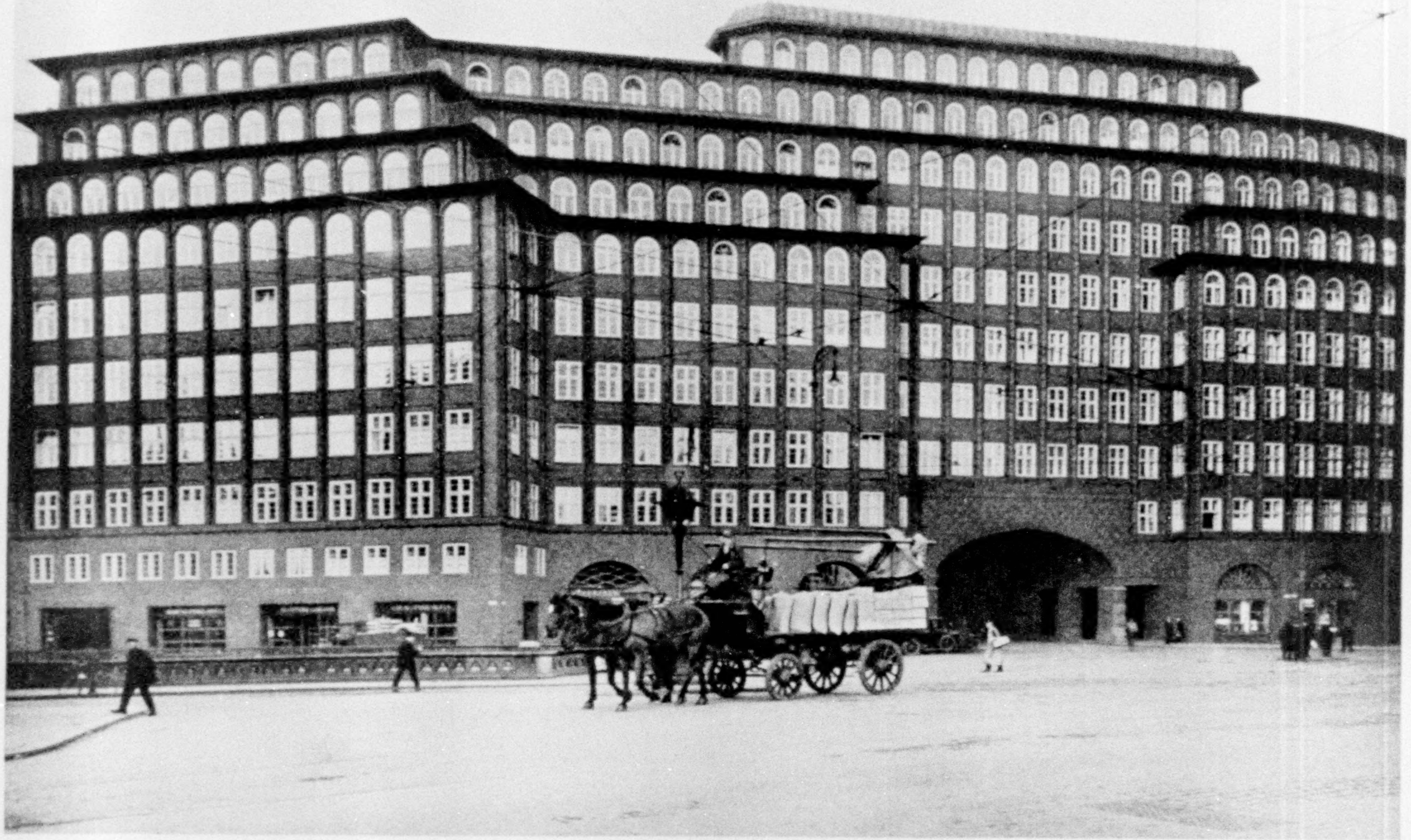
All this is considered by economic authorities to be abnormal and transitory. Ultimately, domestic consumption will



Photograph by Wide World

HAMBURG HAS BEEN FOR CENTURIES THE GREAT GATE TO MIDDLE EUROPE

To Christianize North Sea pagan tribes, early missionaries ventured up from Rome. On the lower Elbe, Charlemagne built his fort—and Hamburg was born. Later, like a giant turnstile, the port passed millions of emigrants from Germany, Austria, Poland, and Russia, in the vast migration to America which set in after 1848.



Photograph by Ewing Galloway

THE CHILE HOUSE IN HAMBURG IS ONE OF NEW GERMANY'S OUTSTANDING OFFICE BUILDINGS

Chilean nitrate interests were largely identified with the construction and occupation of this enormous structure.

KUM

become satiated and there will be an end of indiscriminate borrowing from America and England; but it is too early to foresee what the normal status of Germany's trade with the rest of the world should be. However, certain manifestations of German industrial activities in the deflation years, such as the subsidized dumping of steel rails on the American market, are bound to disappear.

On the other hand, the Reich's trade with Russia is still in its infancy.

The Krupp concern, whose vast plant at Essen turned to peaceful pursuits when Germany's loss of the war destroyed its armaments activity, has been slowly but surely extending its Russian field. Locomotives and farming machinery form the principal items in its cash sales to the Soviets.

During the war Krupp's, whose principal stockholder is the Baroness Bertha Krupp von Bohlen-Halbach, sole heiress of the last male Krupp, was the largest manufacturer of cannon and munitions on earth. The peace terms compelled the abandonment of this lucrative business, and for several years the big Essen factories had hard sledding. Orders from Moscow undoubtedly assisted the company to regain its financial footing. Last December, for the first time since currency stabilization, its directors were able to show a favorable yearly balance sheet, a net profit of thirteen million marks having been earned on one hundred sixty million marks capital.

GERMANY'S UNEMPLOYED REDUCED THREE-FOURTHS

The vital importance of Russian trade to Germany is seldom realized abroad. Before the war the Germans' share of Russia's total foreign commerce was 35 per cent. Last year about one-fourth of the Soviets' business abroad lay with Great Britain and only 22 per cent with Germany. That is why the Reich is trying so hard to swell its export volume eastward—to recover its profitable position as favored purveyor of manufactured goods to all that gigantic and ill-supplied territory beyond the Polish and Baltic republics.

The flourishing condition of virtually every branch of commerce and industry in Germany cut the number of idle workers in receipt of State doles from two million in January, 1927, to 1,188,000 a year later, and to 564,000 in August, 1928, probably the low point for this year. Unemployment offers no insoluble problem to the New Germany.

To-day even one million unemployed Germans do not constitute an alarming total. The jobless normally numbered some 300,000 in the period immediately preceding the war; but in that era there were 700,000 young Germans in the army, as against 100,000 to-day. Hence the German Republic, with its diminished territorial and industrial domain, is called on to provide work for 600,000 more men than was the Empire.

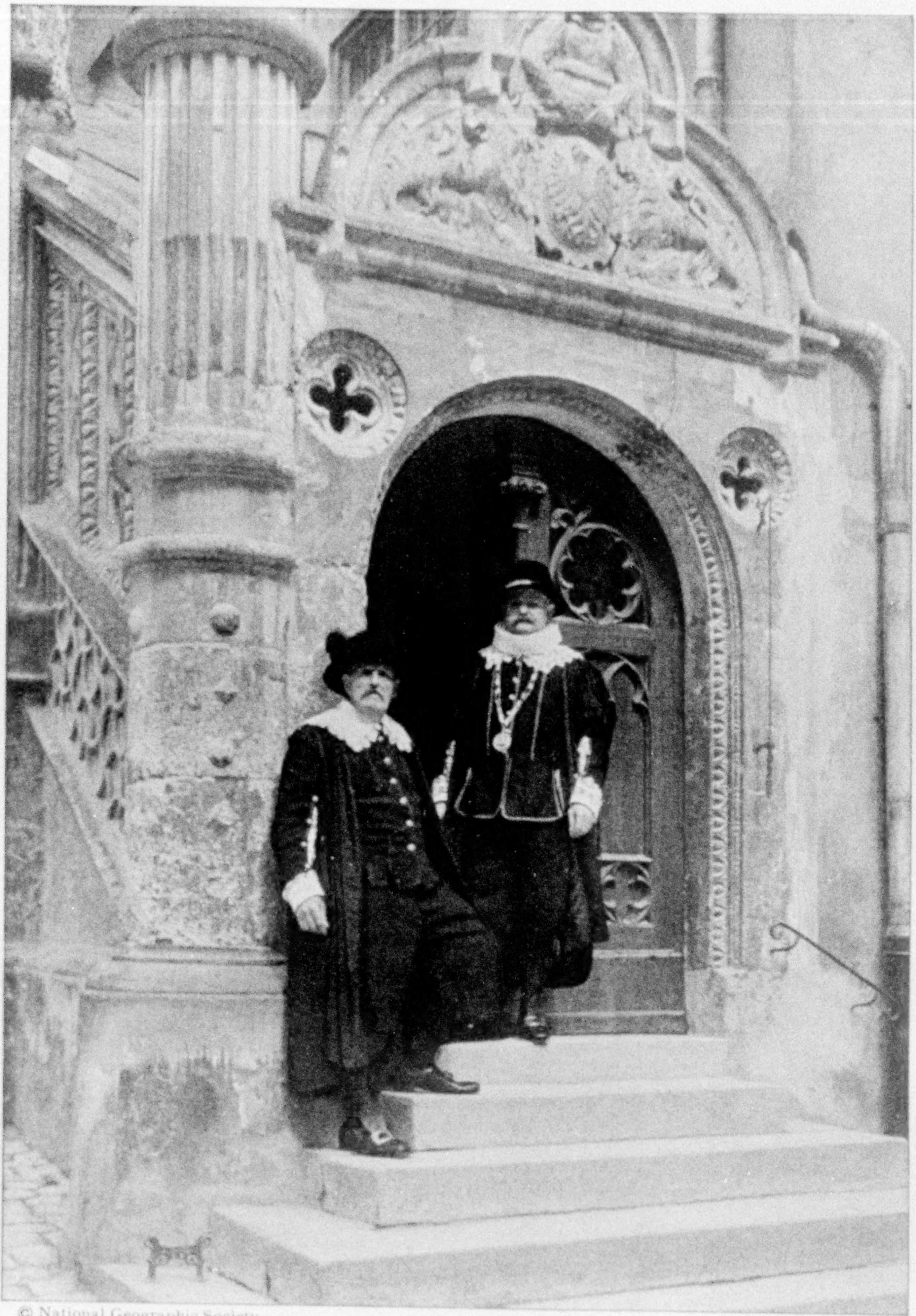
Moreover, in pre-war times comparatively few women were employed outside their homes, whereas nowadays many hundreds of thousands are on factory payrolls, and therefore, if they lose their jobs, entitled to State aid on the same terms as unemployed men.

CITIES ARE USING BORROWED MONEY TO BUILD HOUSES

Another sign of the modern era remarked by the most casual observer is the number of new buildings embellishing every German city. Many of them date from the days of inflation, when capitalists turned their paper marks into brick and mortar with feverish haste. Building costs gold nowadays, of course; yet it is still going on all over the country.

The municipalities are spending the bulk of loans floated in Wall Street for the construction of public offices or apartment houses, designed to help solve their housing problems; for in almost every big center there is a serious shortage of living quarters. Its primary cause is to be found, as elsewhere in Europe, in the complete cessation of building during the war.

In Germany this state of stagnation, so far as dwelling houses were concerned, existed as long as the mark continued to fall. Huge edifices were built for office, store, hotel, or other commercial or industrial purposes, but not a roof was raised to ease the famine in homes and to give newlyweds a flat of their own, instead of cramped accommodations in hotels and boarding houses. Explanation lay in State control of rents, which were kept on a paper-mark basis and at a level so low that landlords' receipts were insufficient to cover repairs on their properties.



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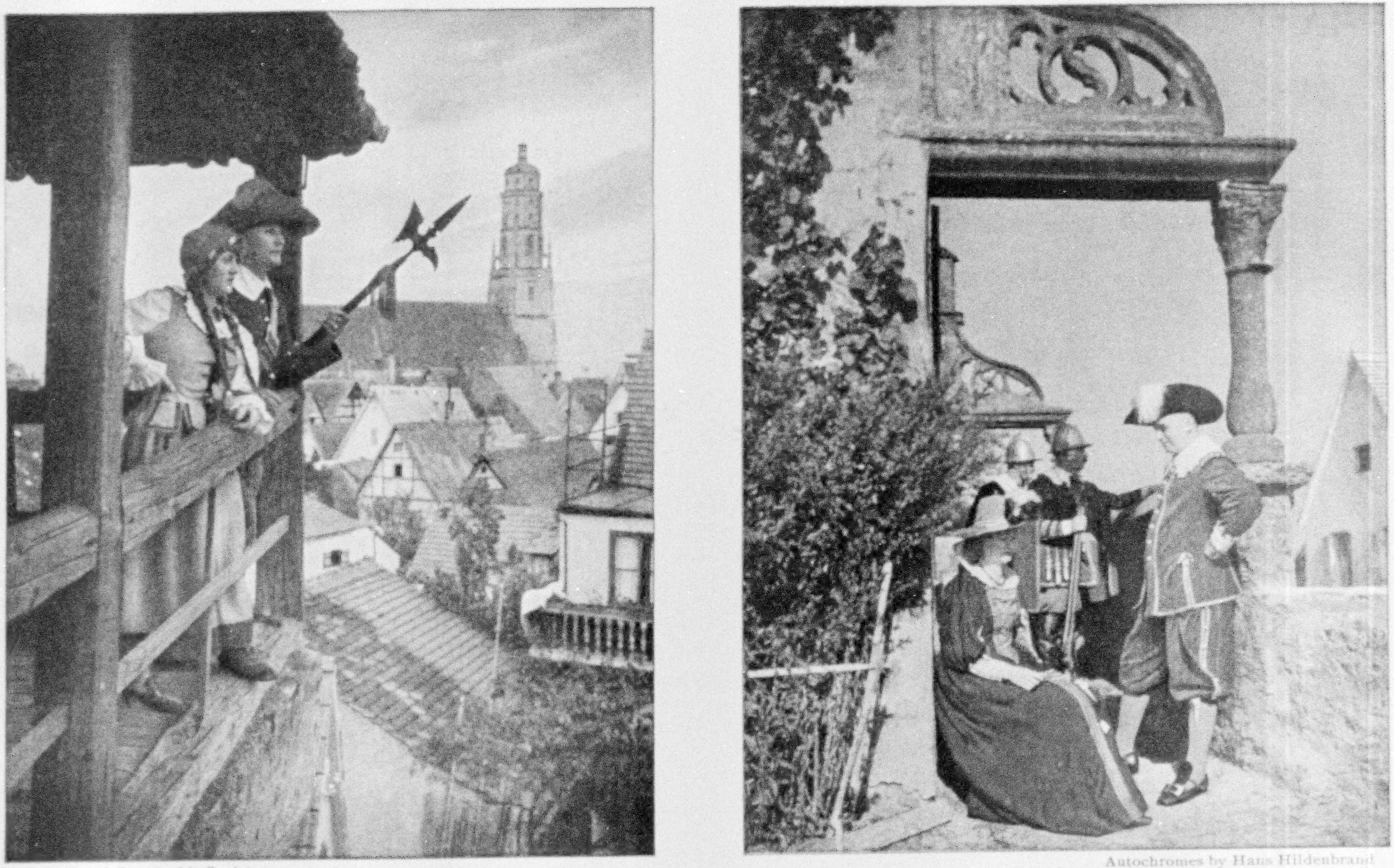
WEARING THE ROBES OF MAYOR AND COUNCILOR OF NÖRDLINGEN'S HEYDAY

This mellow Bavarian city on the great medieval highway of commerce between Augsburg and Nuremberg was once a center of power and culture. Its mayor was a person of consequence, who stood with the Bavarian Elector at the Imperial Court. The Rathaus or Town Hall (above) is a fine Gothic structure containing an interesting collection of armor, paintings and porcelains.



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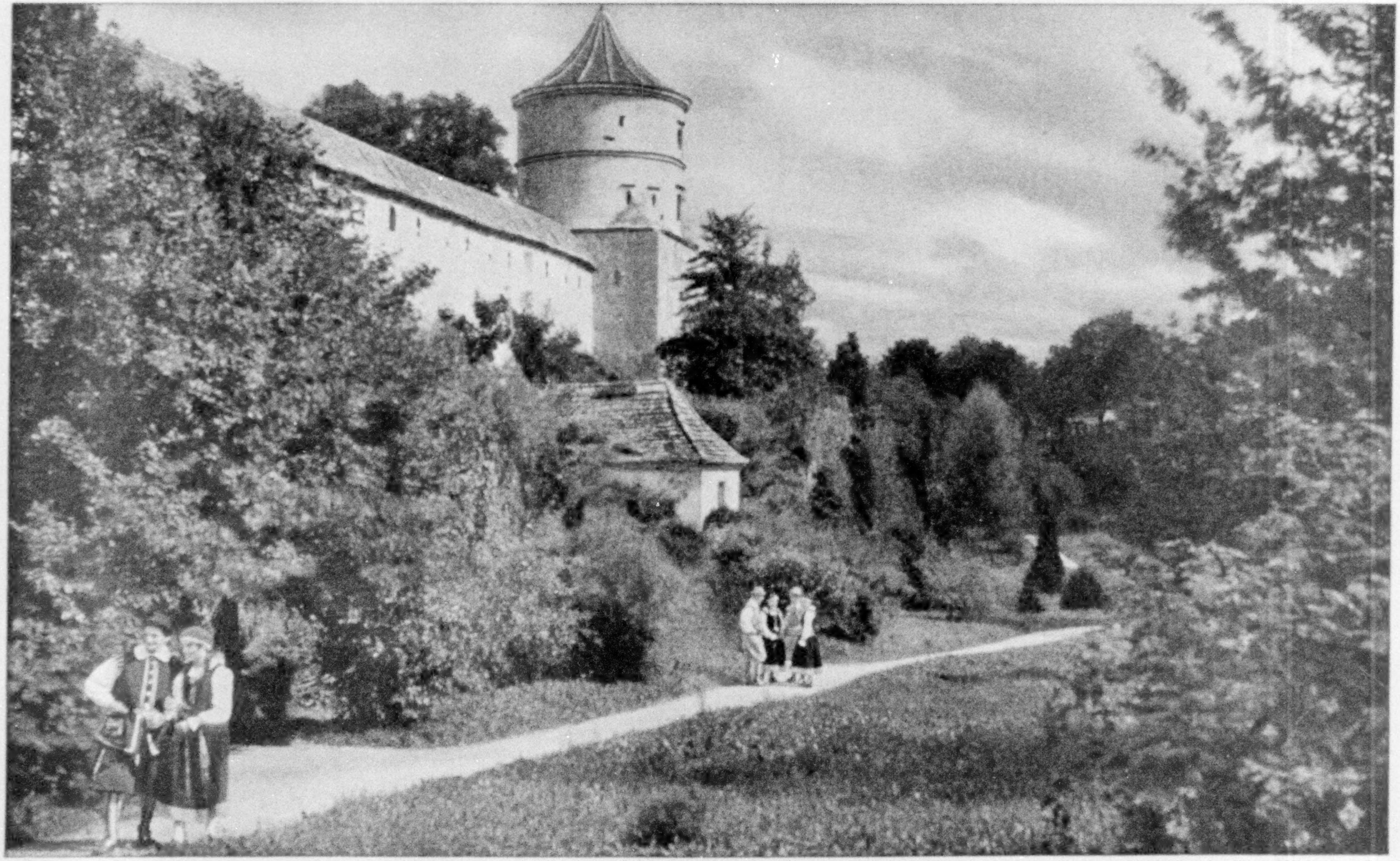
RELIVING THE MIDDLE AGES ON NÖRDLINGEN'S CITY WALLS

Each summer the citizens of Nördlingen hold medieval festivals and dances. One of these takes the form of a play which commemorates the spirit and courage of those who defended the city during the Thirty Years' War. The life of the community turns back 300 years, and the townspeople don the costumes of the early 17th century. The city is represented as besieged by the Imperial army and it finally capitulates.



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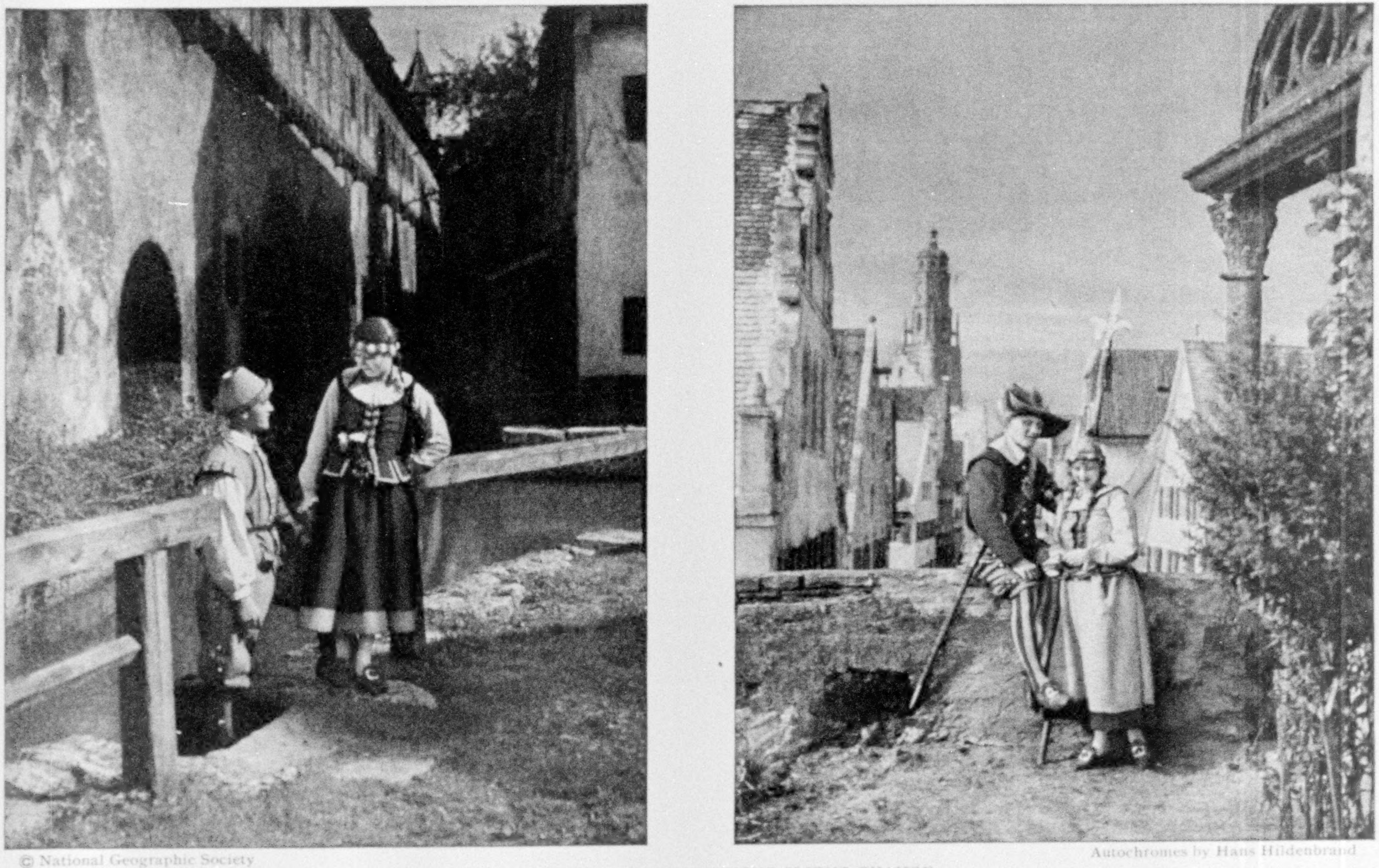
ARMED HOSTS ONCE TROD THE PATH THAT LOVERS STROLL TO-DAY

A terrific battle was fought outside the walls of Nördlingen late in the summer of 1634, when an Imperial army under the Archduke Ferdinand and Generals Gallas and Von Werth decisively defeated the Protestant army under Marshal Horn and Duke Bernhard of Saxe Weimar. Although this was the major engagement in which the city figured, it was no stranger to warfare at other times and the clash of steel was a familiar sound to its citizen soldiery. Above is a tower whose basement, once a prison, now houses an earthquake observatory.



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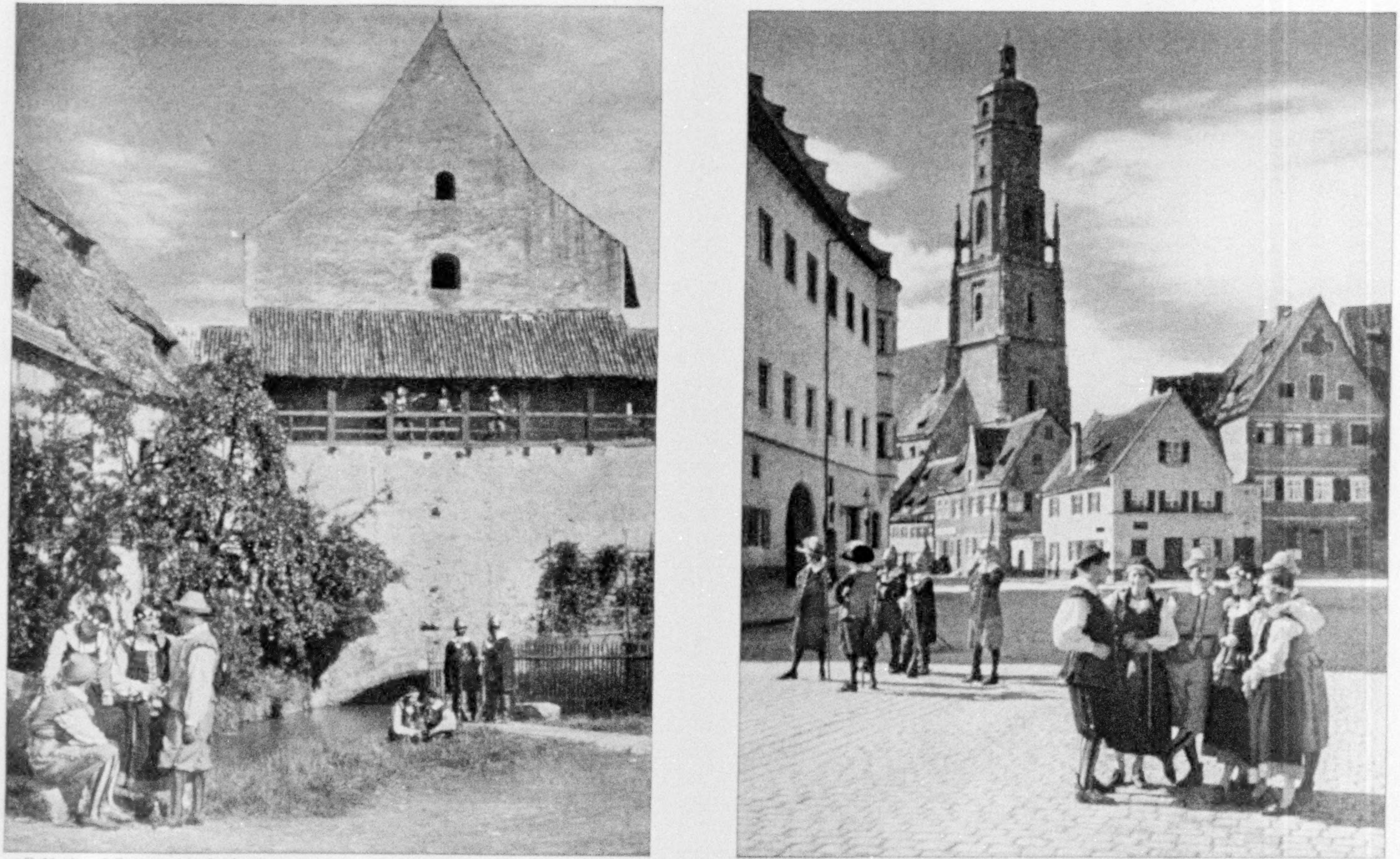
WHERE CENTURIES HAVE WROUGHT SLIGHT CHANGE

Nördlingen's steep gabled roofs and massive walls seem not to belong to this 20th century. Soaring high above the town like a never-failing sentinel, is the 295-foot tower of the Church of Saint George (right). Within the building is one of the most interesting examples of 15th-century wood carving in Germany—a representation of the Crucifixion carved from a single piece of wood.



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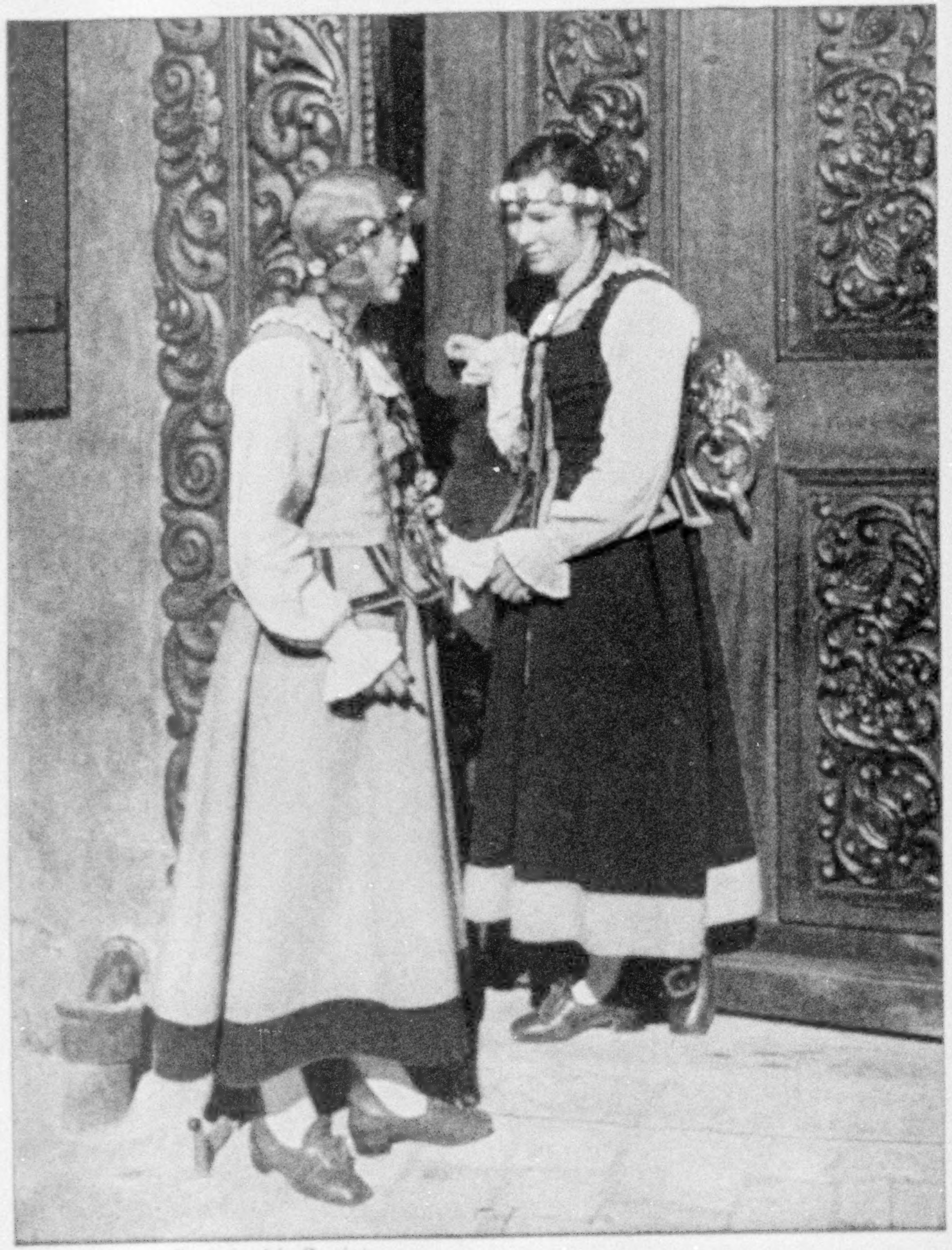
THE INSTITUTION OF THE NIGHT WATCH IS OBSERVED TO-DAY IN NÖRDLINGEN

In the 15th century the city was saved from a surprise attack by a swineherd who spread the alarm that a traitor had left one of the gates open. Five centuries later, a watchman stationed in the church tower still calls down every midnight to another who patrols the streets, and receives the reassuring answer "So-G'sell-So" (All is well). At the left, actors in the summer festival beside the millstream; at the right, a group of citizen performers assembled in the market square where old dances are performed on Sundays and holidays.



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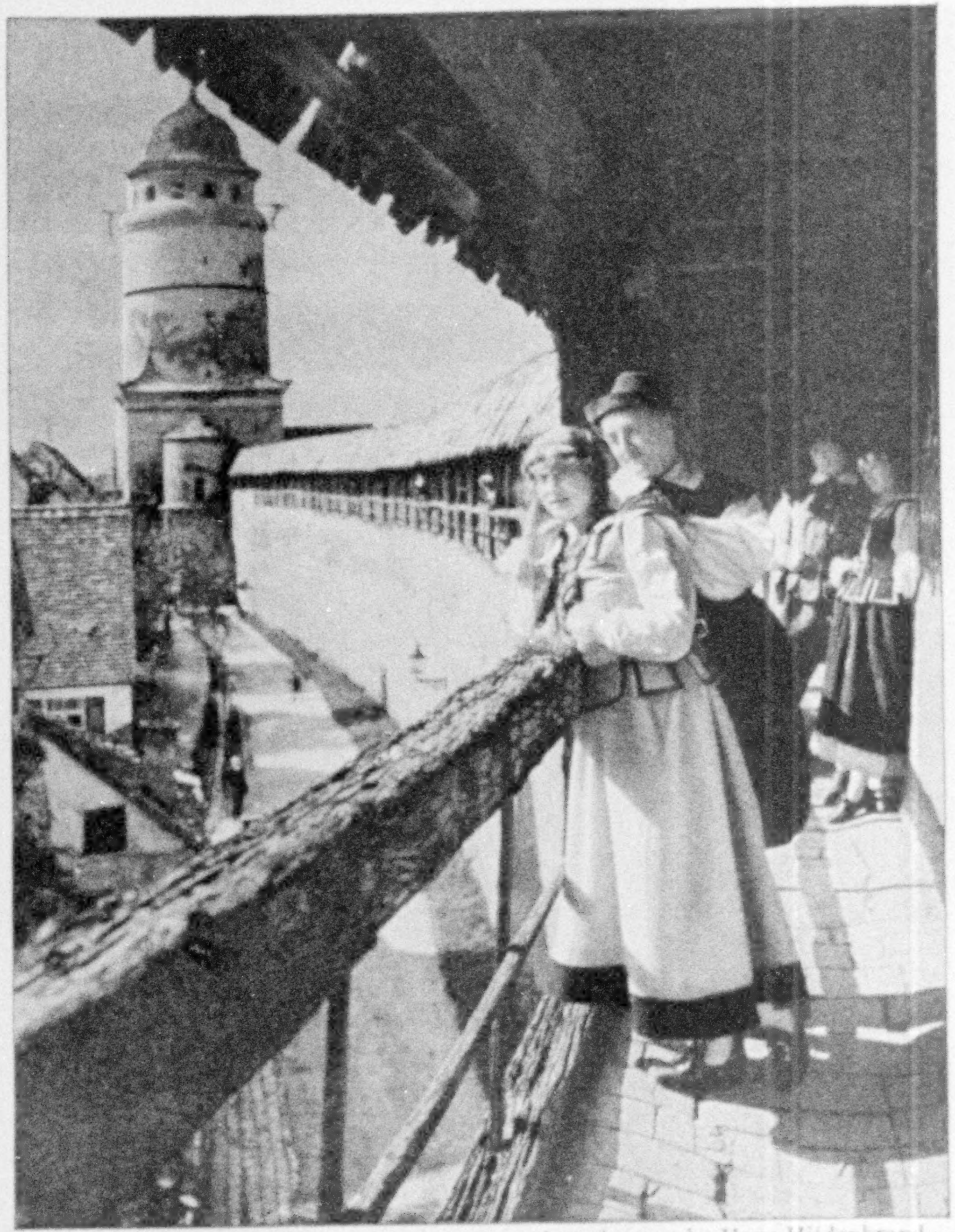
DRESSED TO TAKE PART IN NÖRDLINGEN'S MEDIEVAL PLAY



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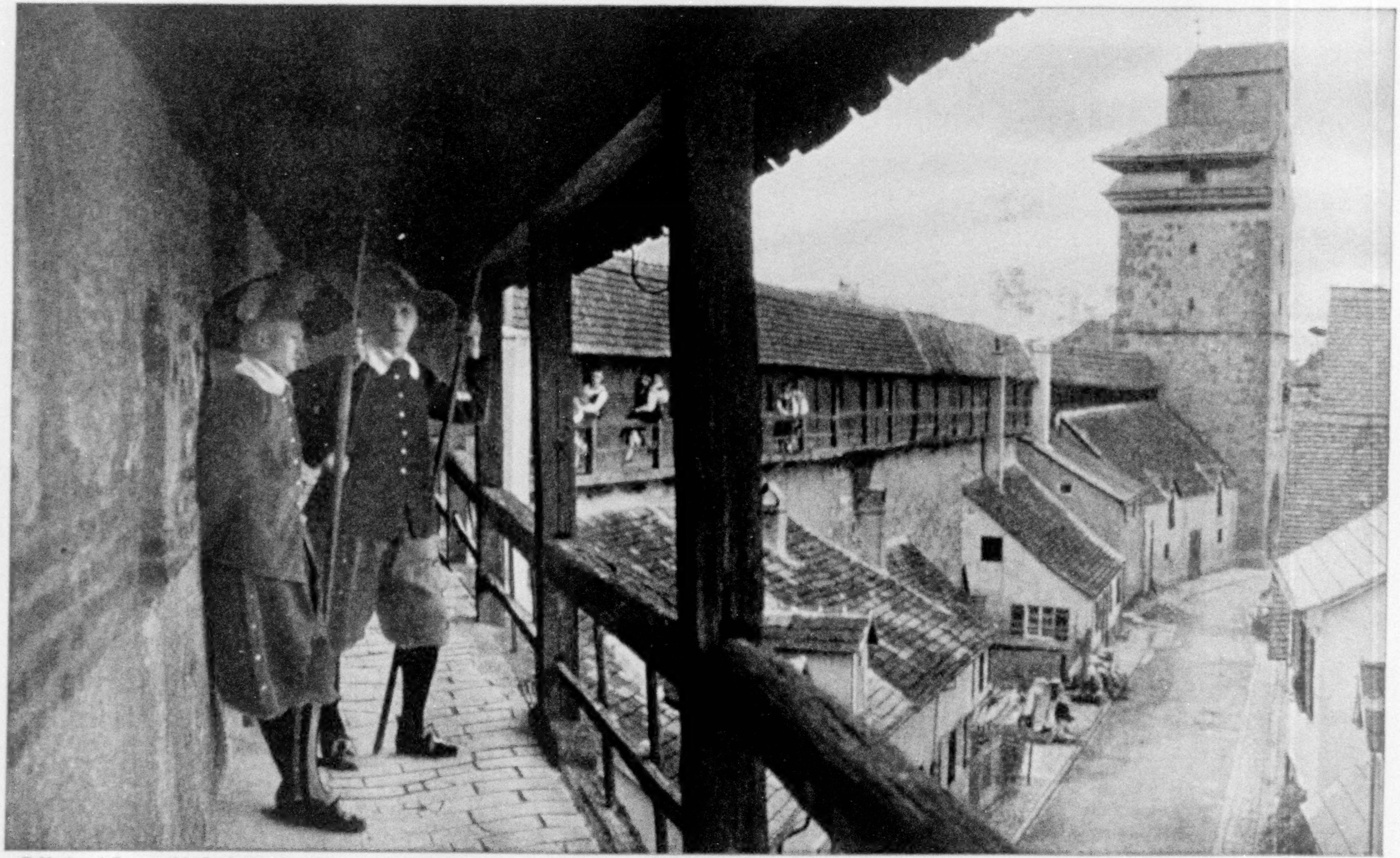
A SECTION OF THE COVERED PASSAGE AROUND THE CITY'S WALLS



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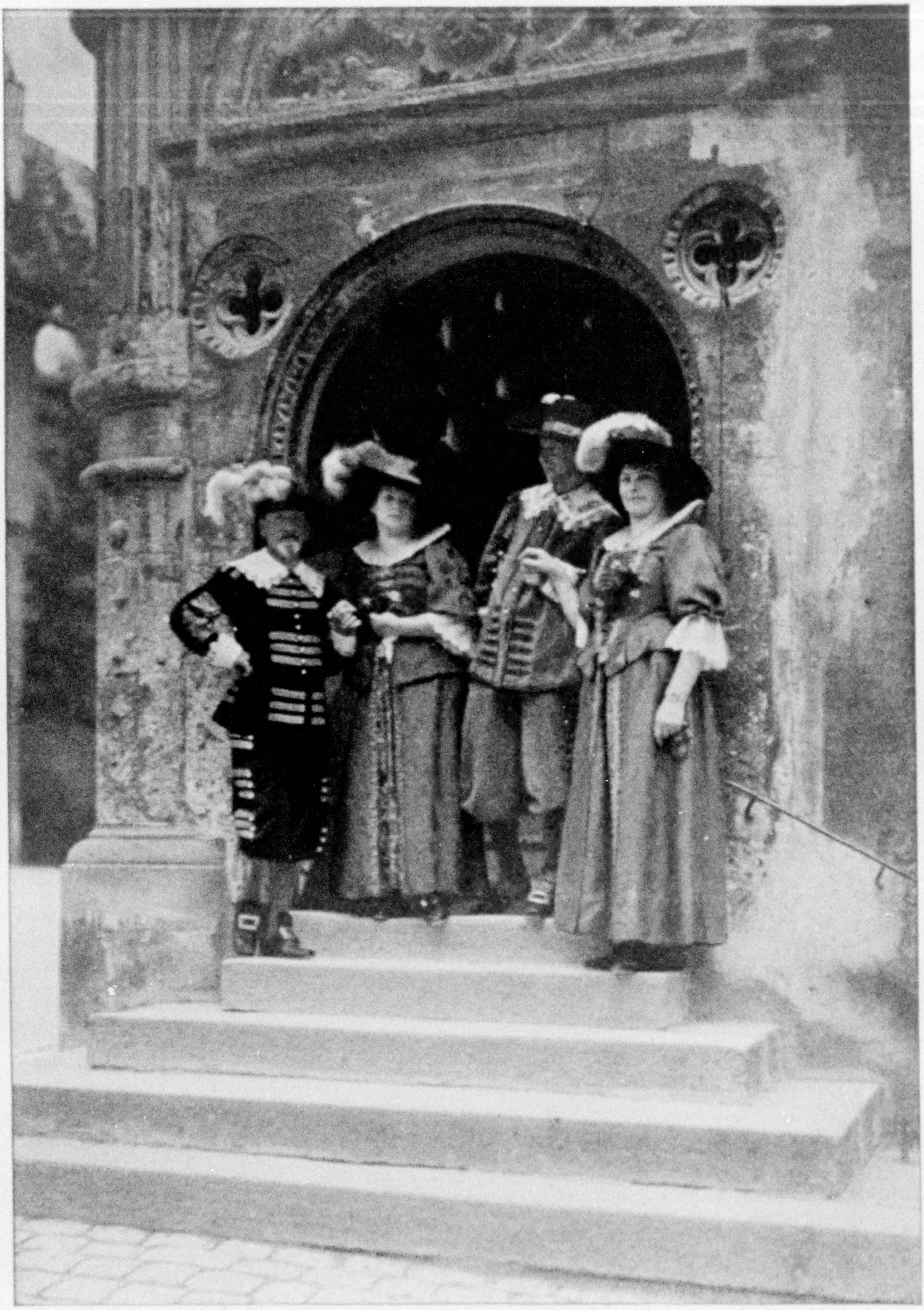
EVERY STONE OF THESE ANCIENT WALLS MIGHT A TALE UNFOLD

During one of Nördlingen's many sieges the townspeople brought all their treasures to the daughter of the burgomaster, who offered to conceal them until the danger was over. This she did, but in an assault by the enemy she was killed by an arrow and her hiding place for the silver and jewels has never been discovered. Legend says that at midnight her spirit walks about the walls, vainly endeavoring to show where the treasures lie. The small 18th century houses built against the wall once served as barracks for soldiers.



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KEEPING FRESH THE MEMORIES OF A GLORIOUS PAST

No longer on the the bustling main track of the world's commerce, Nördlingen now has time to contemplate the splendors of other days and to preserve its traditions for the future.

Municipal backing was imperative and was forthcoming, but on a scale insufficient to meet the public's needs. Thus to-day, with rents 20 per cent above the pre-war standard, the city of Berlin requires some fifty thousand small apartments to house its inhabitants adequately. Building has become increasingly active, although large operations in this line still are hampered unduly by officialdom.

A New York banking house, which undertook to finance the construction of fourteen thousand flats on generous terms, found the enterprise blocked by petty partisan politics. For instance, the Socialists in the Municipal Council wanted four-room dwellings, while the Communist members demanded apartments of two rooms each. Between them they wrecked the project altogether.

ELDERLY FOLK WERE CHIEF SUFFERERS IN THE ECONOMIC CRASH

Adverting to the crash of bonds of the old Empire, it must be remembered that many persons not of the court caste also suffered ruin then. A pathetic feature was the fact that most of those whose income was derived entirely from this source were elderly folk, incapable of starting out afresh to rebuild their shattered fortunes. Fortunately, however, Germany is a workaday nation of large families, so practically all these victims had sons or younger relatives to lend them a helping hand.

It must be recalled that while the State's creditors were annihilated financially through currency inflation, the State's debtors prospered mightily thereby, because the value of their paper-mark borrowings had shrunk to a small fraction of its original amount when repayment fell due. And in every middle-class family, with few exceptions, somebody was a borrower.

The possession of two or three hundred dollars in foreign cash or securities enabled one to live like a prince for months at a time on money borrowed from the national treasury — or printing press — with one's capital left virtually intact after liquidation of the loans. This, too, without participation in the highly lucrative business undertakings of that feverish epoch.

In that day, chiefly during 1922 and until November, 1923, everyone lacking capital and relying on his hands or brain to gain a livelihood was in desperate straits. The troubles of the working class, which certainly comprised the largest number of physical sufferers, have been dealt with already.

SALARIES TO-DAY ARE ADEQUATE

The salaried element, Government officials, higher employees of industrial and commercial concerns, and instructors in the schools and universities underwent almost as severe an ordeal. Disciples of the arts also suffered bitter deprivations. To a less extent, distress existed among doctors, lawyers, writers, and journalists. On behalf of the intelligentsia, which embrace the educational, professional, artistic, and literary groups, heart-rending appeals were issued abroad, particularly in America.

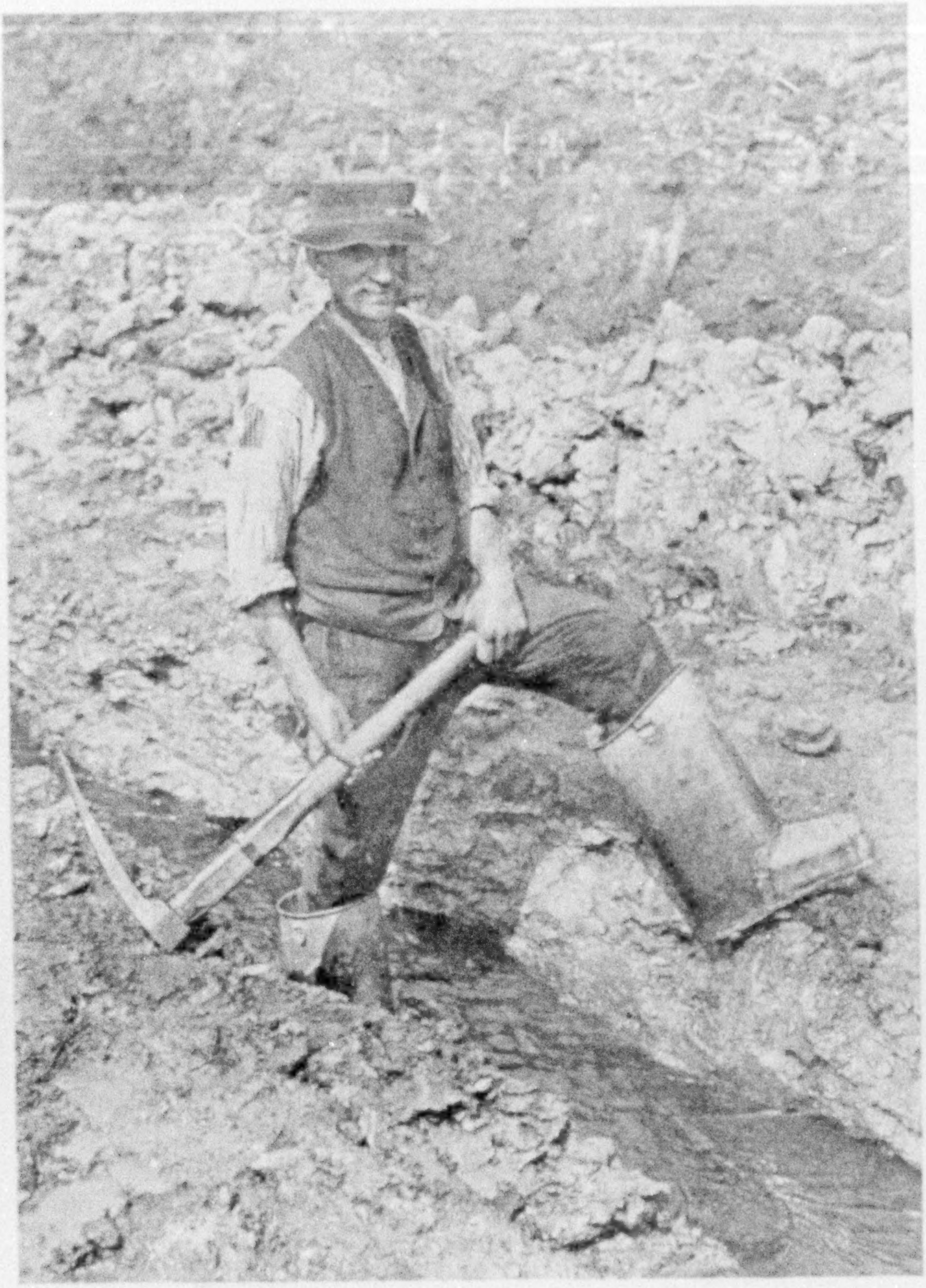
To those who, like the writer, were residents of Germany at the time, it has never been clear why in these broadcast petitions for relief the misery of college professors, school teachers, and medical men should have been accentuated more blackly than that of other equally or more wretched categories.

In any event, all this belongs to the past. Salaries to-day are entirely adequate, although naturally below the American standard. Educators are paid proportionately as well as in other countries, which means they are underpaid. The intelligentsia are eating three or four times daily. Lawyers and doctors demand heavy and sometimes exorbitant fees. Federal and State employees, whose pay previously had not caught up with normal conditions in the country, received a generous raise last December. In a word, the German middle class has completely regained its economic equilibrium.

AN ENERGETIC DRIVE TO INDUCE TOURIST TRAFFIC

To revert to what the tourist sees in Germany, it is safe to say he is offered a more comprehensive, if less ornate, variety of sights than the Imperial era afforded. As soon as the franc quit tumbling and prices soared in France, the Germans set out to get their share of the annual overseas influx into Europe.

Teutonic energy and efficiency collabo-



AN OPEN-AIR COAL MINER, IN HIS BUCKETLIKE BOOTS

rated to tempt the transient American across the frontiers of the Reich. German visas were affixed to American passports free of charge, although many other nations continue to exact $10 from every transatlantic voyager.

AMERICAN TOURIST TRAVEL TO GERMANY DOUBLES IN 1928

An international advertising campaign drew attention to Germany's manifold attractions. German customs inspectors, railroad officials, and hotel men made themselves particularly agreeable to traveling Americans. In consequence, 100,000 of our compatriots visited Germany in 1927 and about double that number in 1928.

What did they see? Well, first of all, everything that was visible in 1913—historic scenes, churches, museums, antiquities, art galleries—and a good many things that were not. For instance, while William II, in his shining armor, no longer delights the touristic gaze, his private apartments in the Berlin Schloss, until recently closed to the general public, now may be viewed at close range. Thus does the New Germany bring history up to date.

Having finished his inspection of all the numerous phenomena delineated by the guidebooks, the traveler is confronted by an imposing array of festivals, musical and dramatic. Munich, Frankfort, Cologne, Breslau, and Dortmund are a few of the cities that seek to serve up special titbits for play and concert goers. At the same time a vast assortment of athletic tournaments is available.

Finally, there is submitted to the itinerant American the greatest aggregation of industrial exhibits ever staged in any one European country. In one month, in Berlin alone, four monster fairs, lasting from three to eight days, were opened for the benefit of the soap, hotel and restaurant, hairdressing and perfumery, and spring-fashion industries.

The Pressa, a huge international press exhibition, began in Cologne in May. Leipzig, Frankfort, and Breslau had their traditional trade sample fairs, Dresden its annual summer art and crafts exhibition, Magdeburg its theater exhibition. There were scores of others in dozens of cities. The tourist who tried to see them all needed a pulmotor.

Photograph by Ewing Galloway

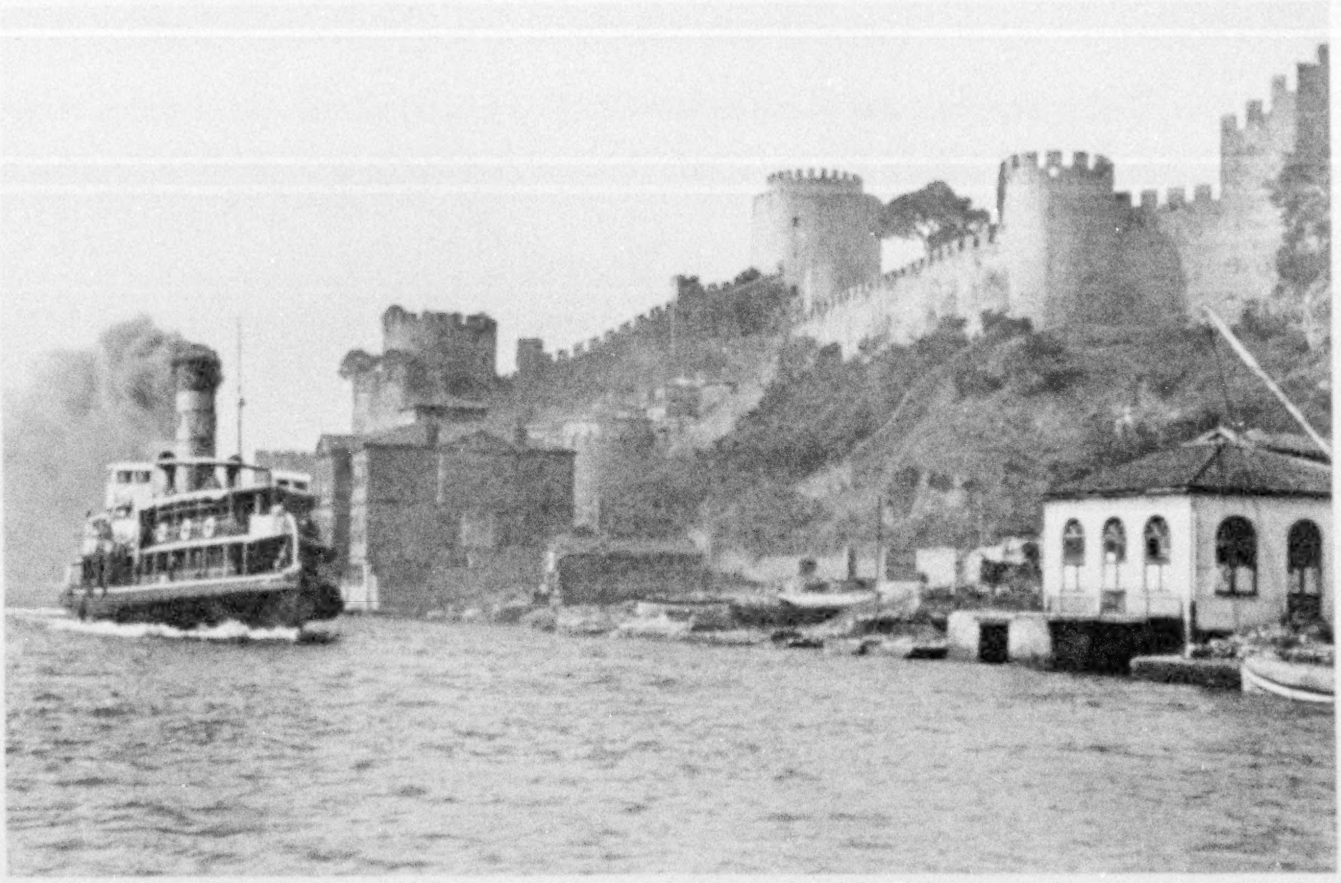
THE MUNICH METHOD OF ROASTING HERRINGS OVER HOT COALS

Satisfactory lodging at reasonable rates, and excellent, albeit expensive, food are found everywhere in Germany. The bigger hotels are modernized and as luxuriously appointed as their American prototypes. In the fashionable restaurants an ordinary meal à la carte costs from two to three dollars without wine. One can eat more cheaply in the so-called beer halls; but, save for such native dishes as sausages, sauerkraut, and boiled beef, the fare is unappetizing.

In the summer there are innumerable concert gardens where dinner is served. Except in the hottest weather, opera is sung the year round in most German cities. Few theaters are open, but a host of cabarets and night clubs compete for the midnight tourist traffic. Their patrons are expected to drink German champagne at five dollars a quart or French at nine or ten.

Dancing continues to be so popular with all classes that in Berlin, in the winter season, some thirty thousand persons attend three or four immense public balls in one night.

Renascent Germany may not have achieved that place in the sun her last ruler so vainly sought. But on her own hearth she is finding to-day the warming beams that radiate from national self-respect, well-being, and peace.



AN UPBOUND BOSPORUS STEAMER PASSES MOHAMMED THE CONQUEROR'S CASTLE

A cannon-studded tower strengthened each angle of the fortress walls. At one time, when the stronghold was used as a prison, one portion of it became known as the Tower of Oblivion from the many prisoners who, having entered it, were never seen or heard of again (see, also, illustration, page 723).

OSSO ITALIANO

THE AUTHOR STARTS FROM CONSTANTINOPLE FOR ATHENS

Passengers take their places in the plane before it leaves the hangar yard and is towed on special pontoons to the water.

SEEING 3,000 YEARS OF HISTORY IN FOUR HOURS

A Panorama of Ancient, Medieval, and Modern Events Against a Background of Mythology Unfolds During an Airplane Journey From Constantinople to Athens

By Maynard Owen Williams

Author of "Syria, the Land Link of History's Chain," "India, the Empire of Romance," "In the Birthplace of Christianity," etc., etc., in the National Geographic Magazine

With Illustrations from Photographs by the Author

FOR the man with ancestors, no other four-hour trip can compare in interest with the flight from Constantinople to Athens.

The route is paved with geography; with history, which is geography interacting with mankind; and with mythology, in which elemental geographic forces are given childishly human characteristics, and winds and thunderbolts take on the qualities of nursery toys capriciously tossed about by undisciplined gods.

Our ancients weren't old folks bored with a world whose forces were caged and labeled, but youngsters defying hardship and domesticating a rebellious earth.

Poets and historians, ladies and their Leanders, Argonauts and Anzacs, have so mosaicked with meaning this age-old route that the air traveler, completing it between breakfast and luncheon, would need that last-minute-before-drowning clairvoyance to take in even the broad outlines of the picture of the rift between West and East, Europe and Asia, sailor and nomad, Greek and barbarian — between what was known and what was off the map.

The battleship *Agamemnon*, leading the Allied fleet into the Dardanelles, A. D. 1915, churned the very waters that bore to the siege of Troy Agamemnon's thousand ships, launched by a woman's face, almost as many years before the Christian Era.

Xerxes, Alexander, and the Turks, their exploits separated by centuries, all crossed the Hellespont at the same point. The northeasters that cool or chill both Bosporus and Gallipoli, and the treacherous currents which inspire gruesome gossip are the same that Strabo and Herodotus described.

THE START FROM THE BOSPORUS

But enough! The mail bag with its bladder float is stowed away, the roof of our cockpit has been slammed shut, the purr of the self-starter has aroused the roar of the engines, we have given the last bumpy kicks to the Bosporus, like a cormorant taking the air, and with a swoop we are off.

Behind us, as we mount, the Genoese castle of Anatoli Kavak, only a moment ago outlined against the Black Sea, has flattened out against a northern tip of Asia Minor (see illustration, page 722).

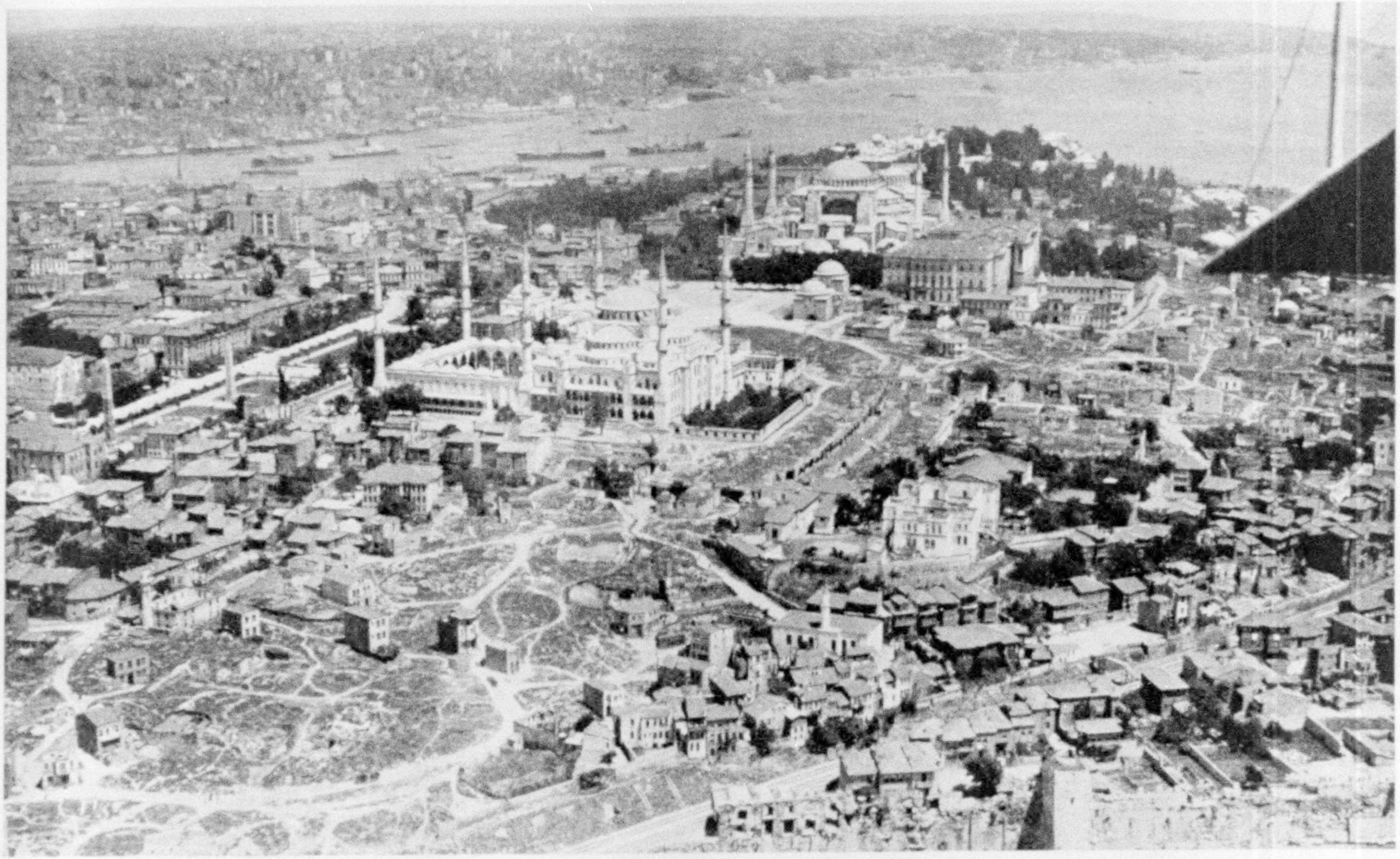
As we round a point, with the palaces and embassy gardens of Therapia below us, our view extends to the Golden Horn.

By the time we reach the strait between Rumeli and Anatoli Hissar we are so high above Mohammed the Conqueror's "Cutthroat Castle" that the ground plan, said to be a chirograph of his Arabic name, is just a comfortable eyeful (see pages 723 and 726).

From a house just behind the tallest tower my family waves good-bye. The day is fine.

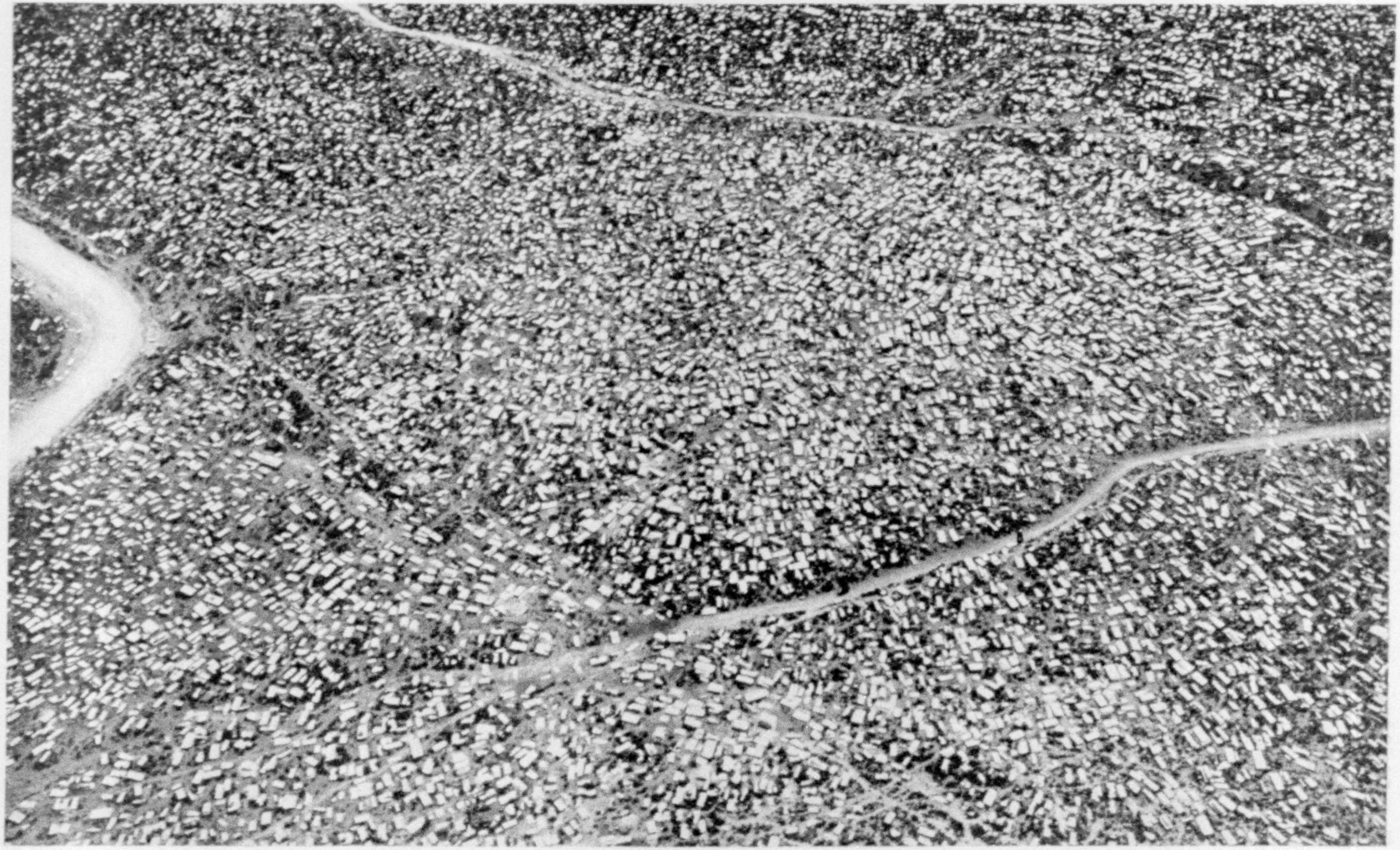
The Byzantine emperor Heraclius, crossing the water barrier here, was so timid that he flanked his pontoon bridge with osier blinders. But our powerful motors give us a vicarious sense of superiority, as we gaze down on slopes we have laboriously climbed on foot, now mere plumpnesses on the softly rolling landscape.

XUM



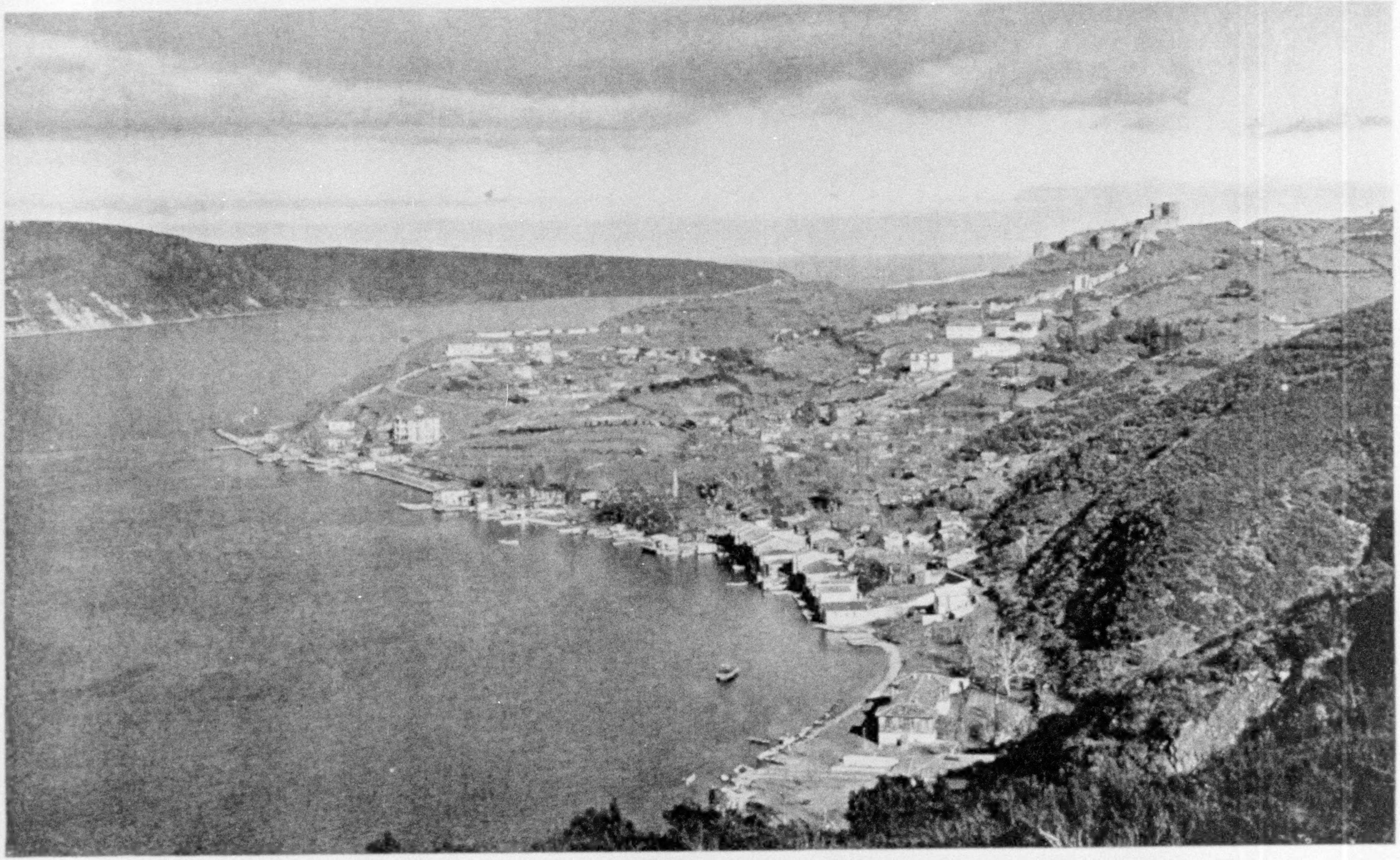
WHERE EAST MEETS WEST: CONSTANTINOPLE FROM THE AIR

At the left is the line of the Hippodrome, axis of Byzantine life, marked by three columns: the Built Column to the south (left); the Serpent Column, its base on a former level some 12 feet below the surface and its top reaching only a few feet above the present level of the ground, and the Obelisk of Theodosius at the right. Against the upper edge of the picture are the slopes of Pera and Galata, the foreign and residential sections of the city. Near the center is the fine mosque of the Sultan Ahmed, with six minarets. Constantinople's most famous monument, Sancta Sophia, lies beyond, and the smaller dome of St. Irene is not entirely obscured. Still farther on are the two spires over the Middle Gate of the Seraglio.



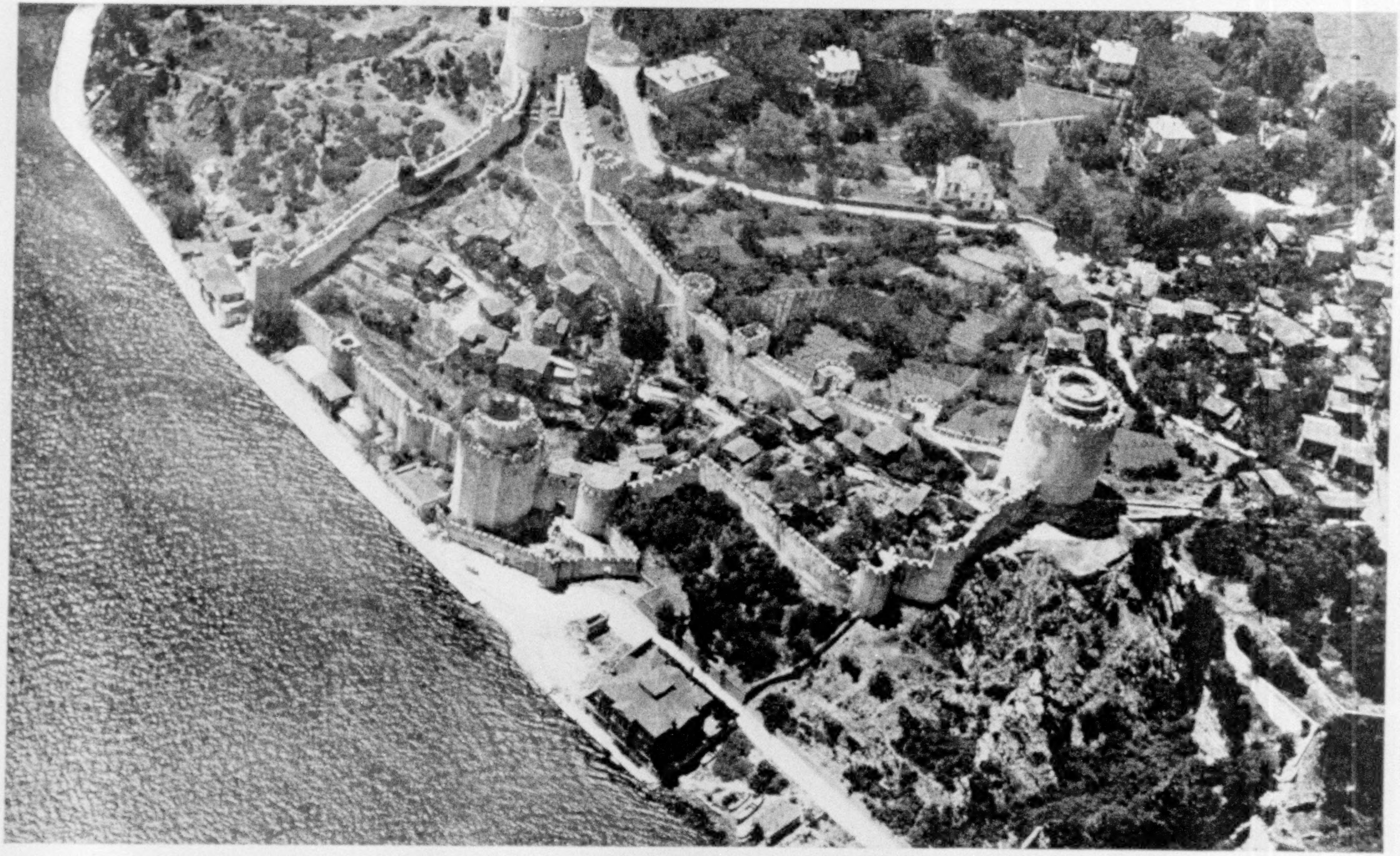
AN AIRPLANE VIEW OF SOUDLOUDJI, WHERE THE CHILDREN OF ISRAEL BURY THEIR DEAD

Dr. Edwin A. Grosvenor, in his authoritative work, "Constantinople," says of this vast Jewish cemetery in the Turkish metropolis: "Not a growing tree and hardly a blade of grass cheers its desolate expanse. . . . Thus was it set apart in Byzantine days for Jewish sepulture. . . . Though the ground is full to bursting, room is always made for more, and the arrivals are ceaseless."



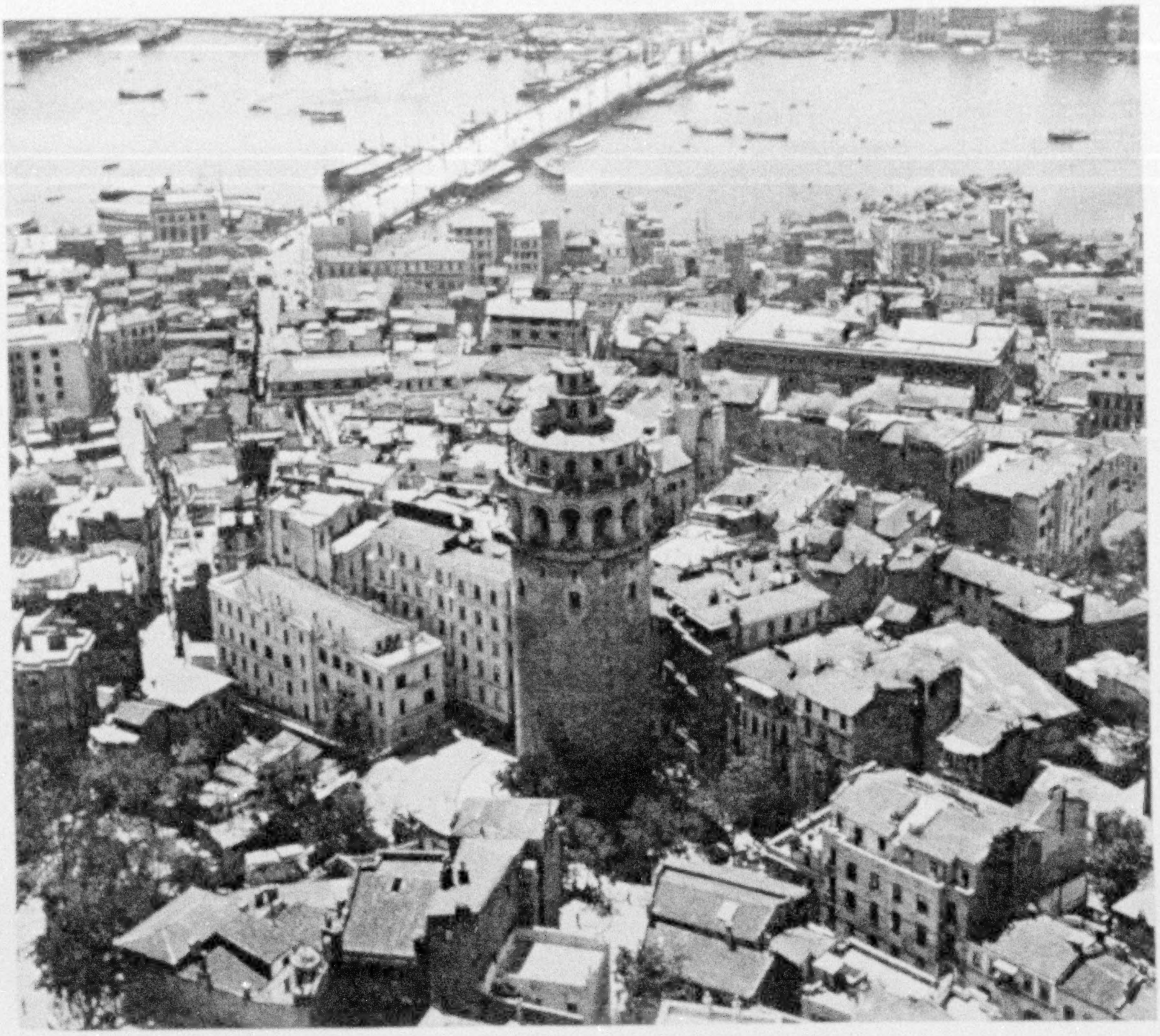
ANATOLI KAVAK SPRAWLS NEAR THE BLACK SEA END OF THE BOSPORUS

From the plane-tree-surrounded mosque near the shore, the town climbs the heights to the Genoese castle, a structure nearly 600 years old. This whole neighborhood was regarded by the ancients as semisacred because of its proximity to the Black Sea, which was held in superstitious dread.



LOOKING DOWN INTO RUMELI HISSAR, BUILT IN 1452

The great sultan, Mohammed the Conqueror, built this fortress to facilitate an attack on Constantinople. He employed 5,000 masons in its construction, and much of the material used came from ruined Christian churches and castles. The energetic Turk pushed the structure to completion in four months, and when the Byzantine emperor sent emissaries to protest against its erection, the besieger threatened to impale the Christian messengers. The walls of the castle are supposed to outline the name of the Moslem prophet, after whom the Conqueror was named.



LOOKING DOWN ON CONSTANTINOPLE'S FAVORITE OBSERVATION POST

The Tower of Galata (near the center) was built in the 14th century, and at that time was an important link in the town's fortifications. Now, however, it is used as a fire-signal station. Galata Bridge may be seen near the top of the picture, with the outer harbor to the left and the Golden Horn to the right.

The ground plan of Robert College takes on rare symmetry. In its center a football game is being played by two tribes of varicolored ants. Now the Constantinople Woman's College is beside us, its buildings aligned into one imposing façade (see page 727).

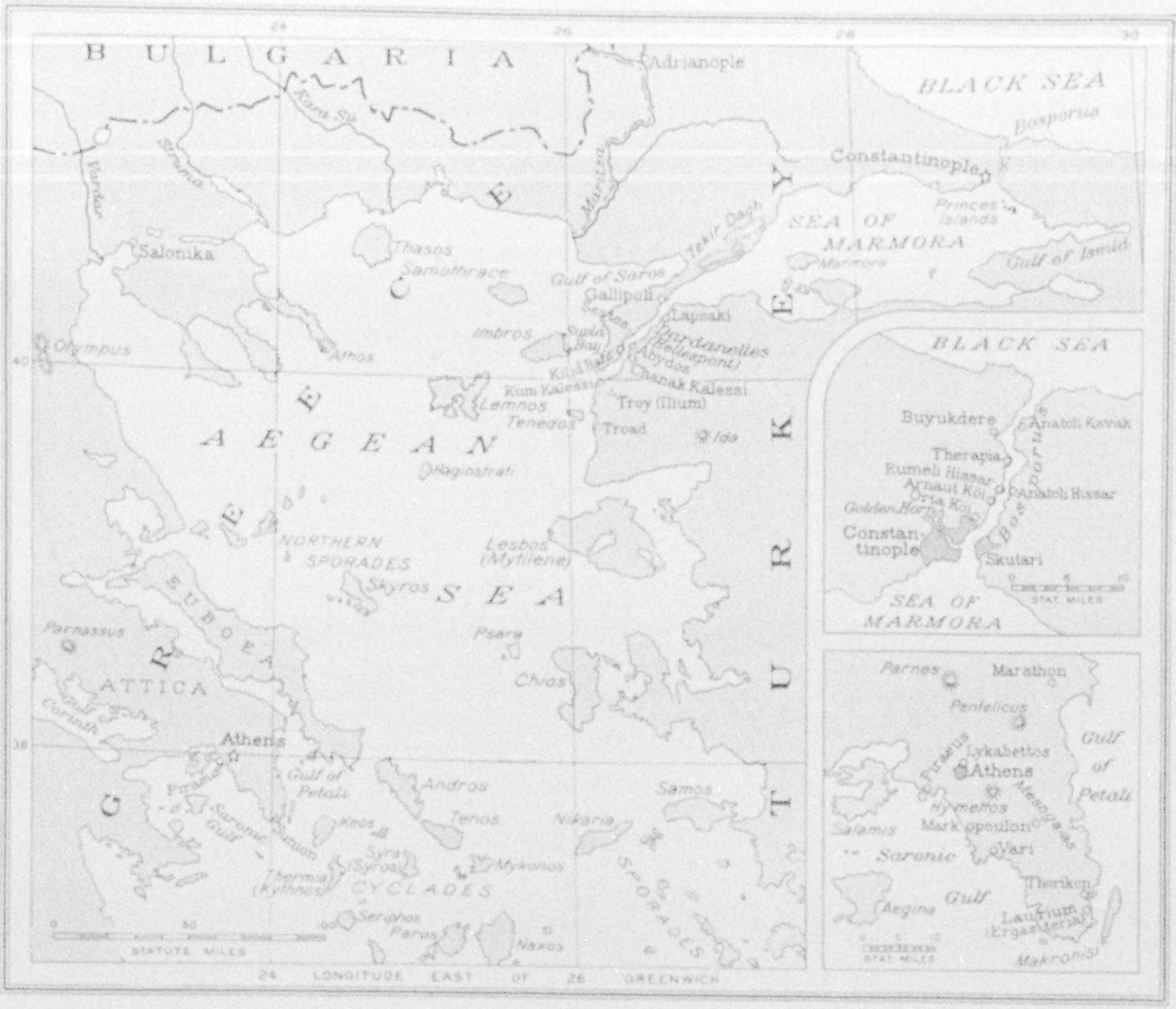
The coal-pockets that smudge the view below Arnaut Köi sweep south toward the glittering jewel-box mosque of Orta Köi (page 728) and the roofless ruin of Cheragan—palace, prison, and parliament house.

There is a slight haze above Stamboul. The Seraglio palaces are visibly isolated from the teeming city; and the cornucopia curve of the Golden Horn—despite its fame, a mere nick in the eastern edge of Europe—is clearly cut between close-roofed slopes, pock-marked by fire and mournful with cypresses rising above marble-skeletoned cemeteries. The fabled seven hills unite into one main, curving ridge.

BYZANTIUM FADES IN THE DISTANCE

Now we are almost over fat-domed Sancta Sophia; and the six minarets of the Sultan Ahmed mosque, so needlelike from the ground, seem squat towers. The obelisks in the Hippodrome, Byzantium's antique pleasure center, have no height, but their shadows stretch wide across a park the perfection of which was never before so evident. I wonder when architects will begin to design structures to be beautiful from the air, as landscape gardening already is.

Outside our left windows the Princes


BULGARIA
Adrianople
BLACK SEA
Bosporus
Constantinople
Princes Islands
SEA OF MARMORA
Marmora
Gulf of Ismid
Kara Su
Struma
Maritza
Vardar
Salonika
Thasos
Samothrace
Gulf of Saros
Tekir Dagh
Gallipoli
Lapsaki
Imbros
Dardanelles (Hellespont)
Abydos
Chanak Kalessi
Kum Kalessi
Kilid Bahr
Olympus
Athos
Lemnos
Tenedos
Troy (Ilium)
Troad
Ida
AEGEAN SEA
Hagiostrati
NORTHERN SPORADES
Skyros
Lesbos (Mytilene)
Psara
Chios
EUBOEA
Parnassus
ATTICA
Gulf of Corinth
Athens
Piraeus
Saronic Gulf
Sunion
Gulf of Petali
Andros
Tenos
Keos
Syra (Syros)
Thermia (Kythnos)
Mykonos
CYCLADES
Seriphos
Paros
Naxos
Samos
Nikaria
SPORADES
GREECE
TURKEY
STATUTE MILES
LONGITUDE EAST OF GREENWICH
Buyukdere
Anatoli Kavak
Therapia
Rumeli Hissar
Arnaut Koi
Orta Koi
Anatoli Hissar
Golden Horn
Constantinople
Skutari
Bosporus
STAT. MILES
Parnes
Marathon
Pentelicus
Lykabettos
Athens
Piraeus
Hymettos
Markopoulon
Mesogaea
Salamis
Saronic Gulf
Vari
Thorikos
Aegina
Gulf of Petali
Laurium (Ergasteria)
Makronisi

Drawn by A. H. Bumstead

THE SHORES OF THE ÆGEAN HAVE PROVIDED THE GEOGRAPHIC PANORAMA FOR MUCH OF THE HISTORY OF CIVILIZATION

Islands bathe in sun-spread quicksilver and the Gulf of Ismid loses itself beyond (see map above).

Off our right wing the landward wall of Byzantium, starting imposingly with the Seven Towers, dwindles away until its battlements are lost behind a hill overlooking the Sweet Waters of Europe.

We have been gone 20 minutes and the Sea of Marmora has spread so wide that I take time to unfold my maps, and my fellow-passenger turns to the financial news and the announcement of the Leipzig Fair in his French edition of a Turkish paper. The vibration puts velour edges on the type.

"Sparks" comes forward, bearing a wireless from the Commandant at Buyukdere, asking how we like the ride, and I pencil a message expressing my keen delight.

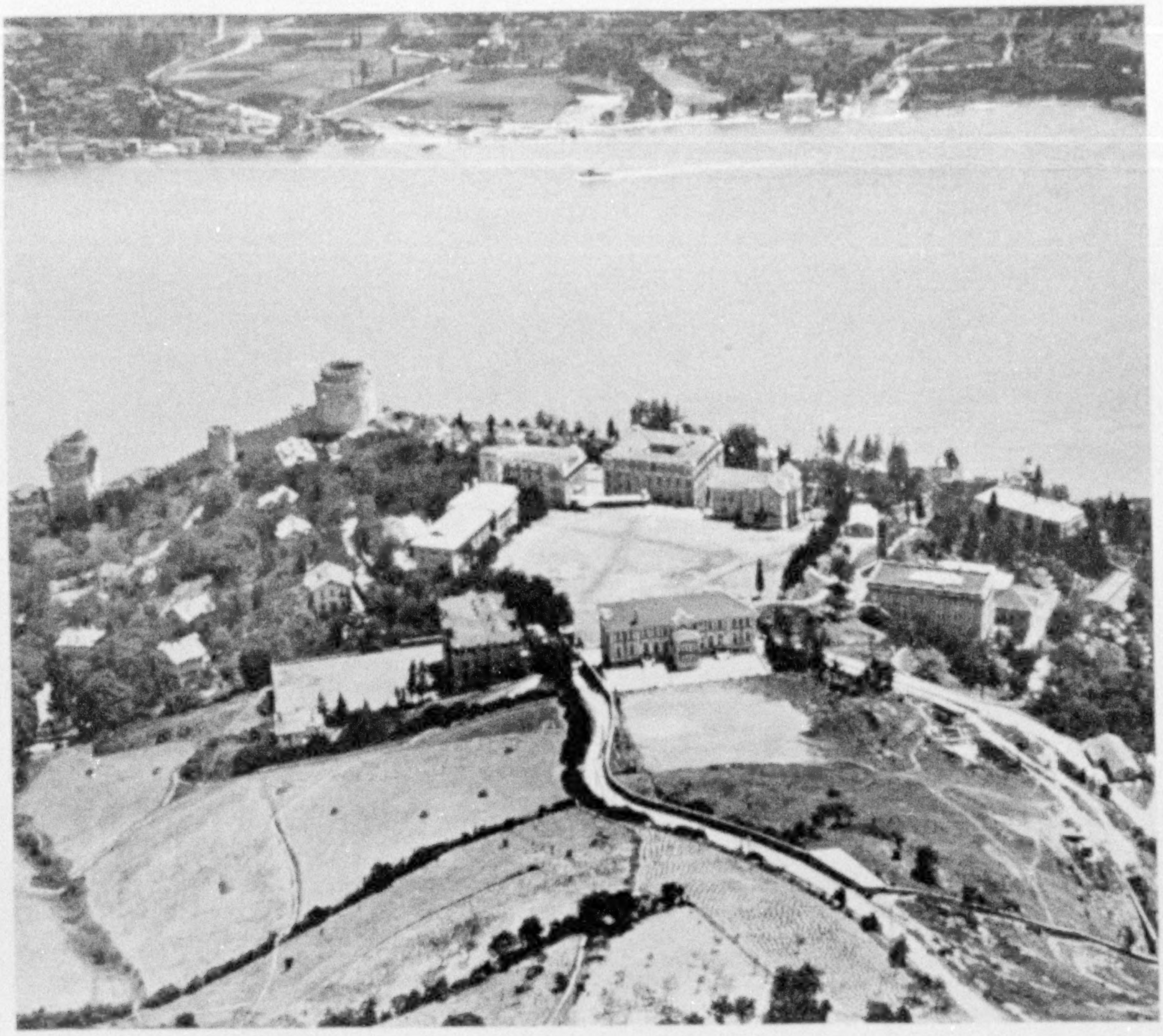
Pilot-Commander Micheli then drops in to warm up a bit and to exchange cards. He offers cotton for our ears and rubs his own eardrums with ointment.

Strange streaks on the Marmora look like meandering rivers cutting low country in the direction of the Rodosto plain, but the real land proclaims its presence by a tawny line between the sea and a paler blue below us that is sky.

There is not a billboard to look at; not a barbecue stand; not even a gas station! I wonder if Micheli inspected his tanks. Perhaps aviation discourages forgetfulness.

We are hovering noisily above the waves in which a toy ship is mysteriously edging its cutwater with silver. Nothing moves except our crosslike shadow on the lightly rippled sea.

Almost parallel lines, corkscrewed like the strands in a hawser, stretch across the sea east of Marmora, the island that gave marble its name. Above the land is a fine white cloud like that painters use to suggest that a cone-peak is a volcano.



THE TOWER OF EUROPE, WITH ROBERT COLLEGE TO THE RIGHT OF IT

Rumeli Hissar commands the narrowest neck of the Bosporus, age-old crossing place for Darius, Xenophon, and others; Anatoli Hissar lies across the Bosporus, where the historic stream, Sweet Waters of Asia, enters beside the walls of the Asiatic castle.

Behind my head is a tiny window opening on the pilots' cockpit, cluttered with instruments and levers. But Micheli steers with a wheel like that of an automobile. The reserve pilot, his cheeks bright red, is beating his half-numbed hands against his sides.

Sparks comes in again, rubbing his palms with that Pilate gesture which, throughout the Levant, means "Finished." In sign language he shows that the pilots, pampered folk, are perfectly protected from the weather, but that the back-draft gets the wireless operator in the neck.

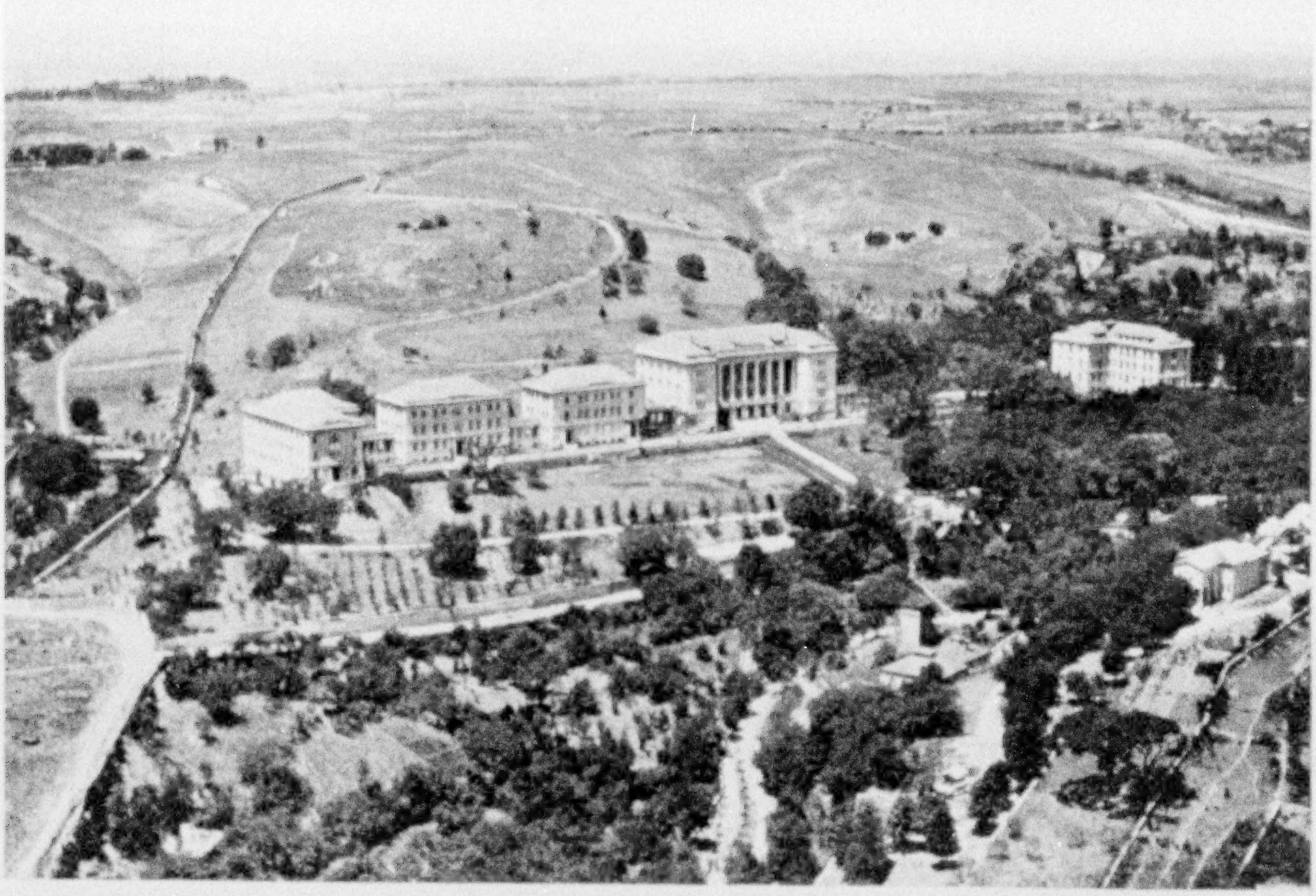
AN OBJECT LESSON IN GEOGRAPHY

Now we are looking straight down on the island of Marmora, unexpectedly large and full of valleys. Around a tiny bay in the north edge, marble cliffs or slag dumps, white as chalk, describe a horseshoe curve. In what corner of Byzantium has that tiny cove not made history?

Now Europe edges in from the right, with the ridge of Tekir Dagh, emphasized by cumuli, stretching down to give backbone to Gallipoli.

What a place to study geography! The two most famous straits of olden times, where Helle drowned and Io, Hera's rival, forded the Bosporus. Islands galore, bays and gulfs, meandering rivers, plains, mountains, town sites whose logic can be read at a glance, and a neck of land which could pose as "Miss Isthmus" in any geography contest. A volcano and a glacier would about complete the list.

Even the atmosphere preens itself and shows off. Ahead of us is a line between our blue sea and mud-tinted water beyond.



THE CONSTANTINOPLE WOMAN'S COLLEGE

Back from the Bosporus, with its many side valleys descending from the flanking hills, this narrow neck of Europe is a plateau cut into softly rounding hills. Only near the rift between Europe and Asia are the slopes steep. One lesser valley is occupied by the grounds of this great center of education for women in the Near East, where the daughter of the American Ambassador, the daughter of the Bulgarian attar of roses magnate, refugee daughters of Russian noblemen, and daughters of Turkish families of the highest class mingle with poorer girls from the entire Near East. Mrs. Evangeline Lindbergh, mother of Col. Charles A. Lindbergh, is now a member of the faculty of the Woman's College.

As we approach this tenuous boundary we go into a series of bumps, as if our shadow were getting its stride before hurdling it. Once we pass the line, it disappears and what seemed brownish water has become a soft, blue reflecting pool for the clouds above the base of Gallipoli, so low and narrow that we can see the Gulf of Saros over against the hills that hide the Maritza Valley.

There are dark storm clouds ahead and rain is sweeping the peninsula. Below us, on black water, oil spots, like floating peacock feathers, gaze up with iridescent eyes.

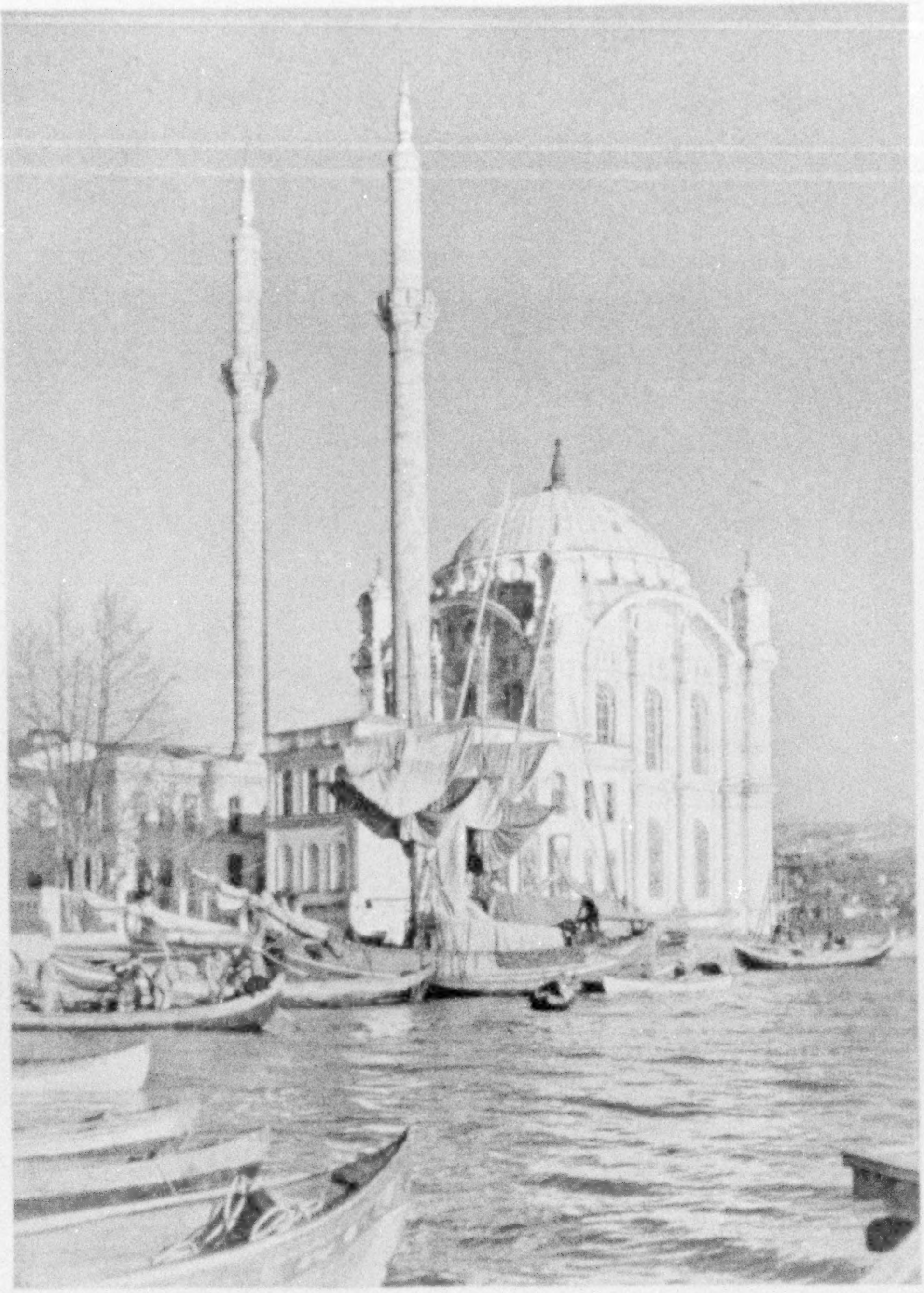
Asia Minor is one vast succession of blue-black serrations, an ancient waste in which a single tiny wisp of smoke seems pitifully alone. Broken fields of sunlight and shadow, seen under a dark visor of cloud, emphasize the endless perspective of plateau, water-carved into ridges.

We are above the upper entrance to the Hellespont, with Gallipoli on the opposite shore. Just under our hull is a level hill where there used to be a Turkish fort.

A driving snowstorm rages between us and the checkerboard fields near Lapsaki. It used to be Lampsacus and was famous for its wine and Priapic worship. The town, being made of mud and stone, may have moved about a bit, but the name has hovered right there since the days when Themistocles was its *monarchos* and the idea of hereditary monarchy was new.

In a little harbor behind a low, yellow sand bar a covey of sailboats rests at anchor and close at hand a man driving white oxen is plowing a geometry demonstration against a gold field which turns purple behind his plowshare.

It must be about here that Helle fell from the back of the ram with the golden fleece. I remember the picture in some old history book, in which Phrixus is seen almost nonchalantly waving to his drowning but unusually buoyant sister. She got



A WOMAN BUILT THE GRACEFUL MOSQUE OF YENI VALIDEH

Among the outstanding features of Orta Köi is this delicately beautiful white mosque, erected in the last century by the mother of Sultan Abdul Medjid.

fame and he oblivion. Everyone knows the Hellespont, but who ever heard of Phrixus, anyway?

Lapsaki has its own little *marina*, but the main town stands back from the water, its reddish-brown roofs arranged in seemingly perfect squares. The junction of land and water here is of extreme beauty, the shoreline edged with a greenish blue matching the melon dome of Tamerlane's tomb and breaking away to the royal purple of the deeper water.

HERE LEANDER SWAM TO SEE HERO

We seemingly increase our speed over the narrows where Leander swam to see Hero and set an example for Lord Byron and others (see illustrations, pages 730 and 731). On a bridge of boats Xerxes crossed here to invade Europe. A century and a half later Alexander returned the compliment. Centuries later the Turks marched over toward Vienna.

Beyond the Gallipoli Peninsula we can see Suvla Bay and below us is the old tower of Chanak Kalessi, until recently ringed with modern forts. Across the narrow neck of water is the trefoil fort of Kilid Bahr, a stalkless ace of clubs spiked down with a tall central tower (see illustration, page 732).

The *Queen Elizabeth,* in Suvla Bay, sprayed this region with her heavy guns, while the Turks prepared floating mines which the Black Sea current would carry down against invading ships.

Who in Homer's time could foresee the dreadnaught that would bear Agamemnon's deathless name up to the very scene of his triumphs, only to retreat when ship after ship went down?

Sparks points down to a grounded wreck and shouts "Français," and I scribble *Bouvet* in my notebook to show that I understand. She sank so quickly that only a score of her men were saved.

Out of 18 ships that started up the Dardanelles that day (March 18, 1915), three were sunk and three disabled in their adventure with that hypocritically innocent-looking little stream.

As we hang above the scene steady as a church, how hard it is to realize that only

FROM THIS VANTAGE POINT DARIUS THE GREAT WATCHED HISTORY IN THE MAKING

The Persian monarch is reputed to have taken up a station here (near the site of Rumeli Hissar) to watch his Asiatic hosts pour into Europe across the bridge of boats spanning the Bosporus. However, the sight of his victorious armies could have been no fairer to the warrior king than is the magnificent view up the Bosporus which this elevation commands.

13 years ago the airplane was little used in so momentous a campaign!

Here we are over Troy, immortalized by Homer and Vergil, described by Strabo, medievalized by Benoit de Sainte-More, recovered by Schliemann and Dörpfeld—a rain soaked, soggy plain, cut by mere brooks and utterly without dramatic quality.

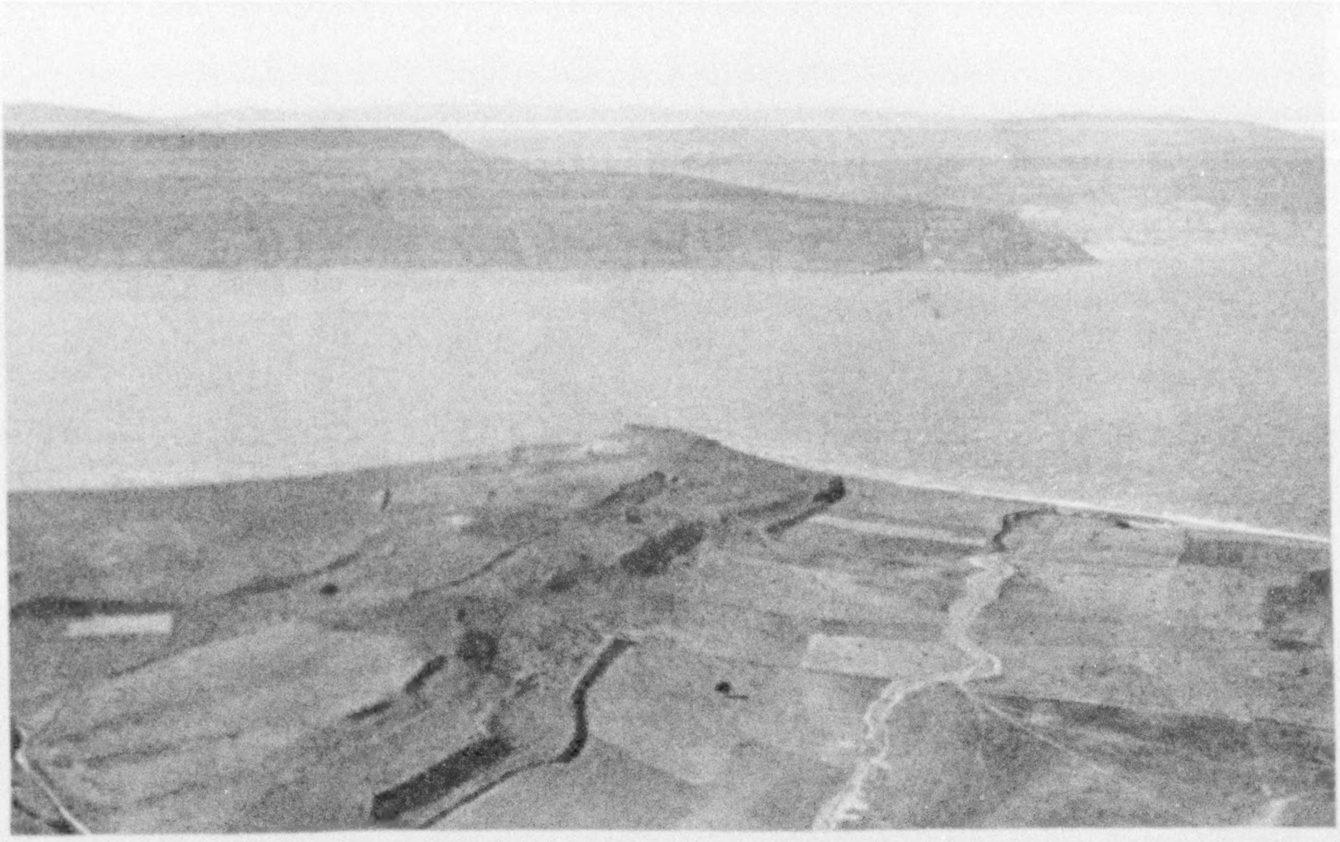
ON THIS SPOT STOOD THE WOODEN HORSE THAT RUINED TROY

The mound of Hissarlik, where the Trojan walls rose above many an earlier settlement, so that its excavators, pushing back history's horizon, did not know how far, cannot be distinguished, although the stream-forked crotch is plain enough.

Here the Greeks "played horse" with the Trojans, and Achilles, before war was standardized, was able to set an example of frightfulness with the body of Hector. But, hundreds of years later, the Ilians showed Alexander the fateful shield of Achilles. There may have been a barbarian side of the story, too.

Below us, at the entrance of the Dardanelles, is the roofless gray skeleton of Kum Kalessi (see page 733), occupying a spot that must have had its greatest significance in the days before mariners had learned to tack; for here, as ally to the adverse currents of the Hellespont, there blows for nine months of the year a wind which at times becomes a veritable northeaster, tearing down the channel.

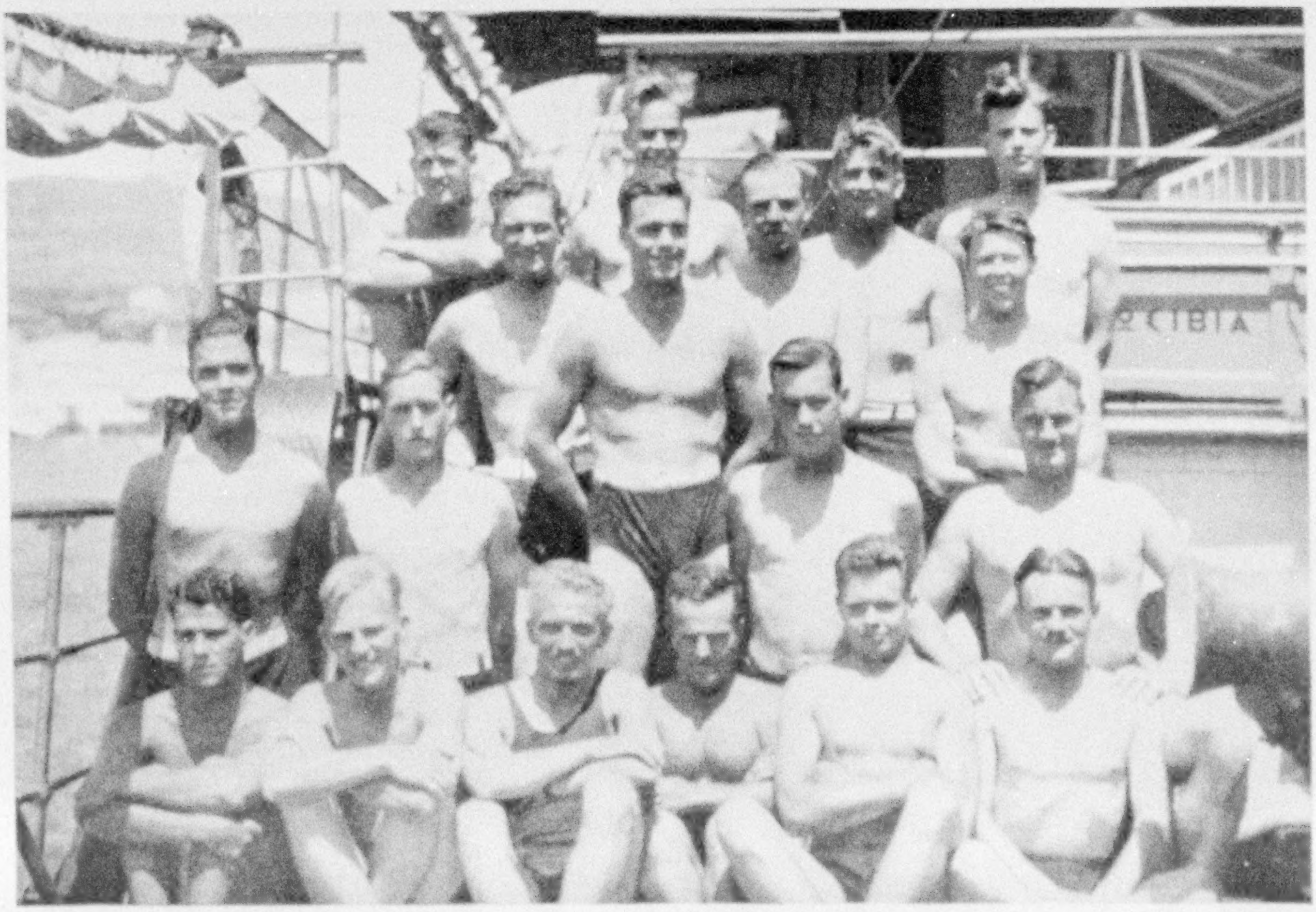
From the earliest days, sailors who had timidly crossed the Ægean from island to



Photograph by Maynard Owen Williams

THE NARROWEST POINT OF THE DARDANELLES

Between the towns of Abydos, on the Asiatic side (foreground), and Sestos, on the European, the strait is somewhat less than a mile in width. Here Leander is supposed to have swum across each night to visit his beloved Hero, and here he met his death beneath the waves.



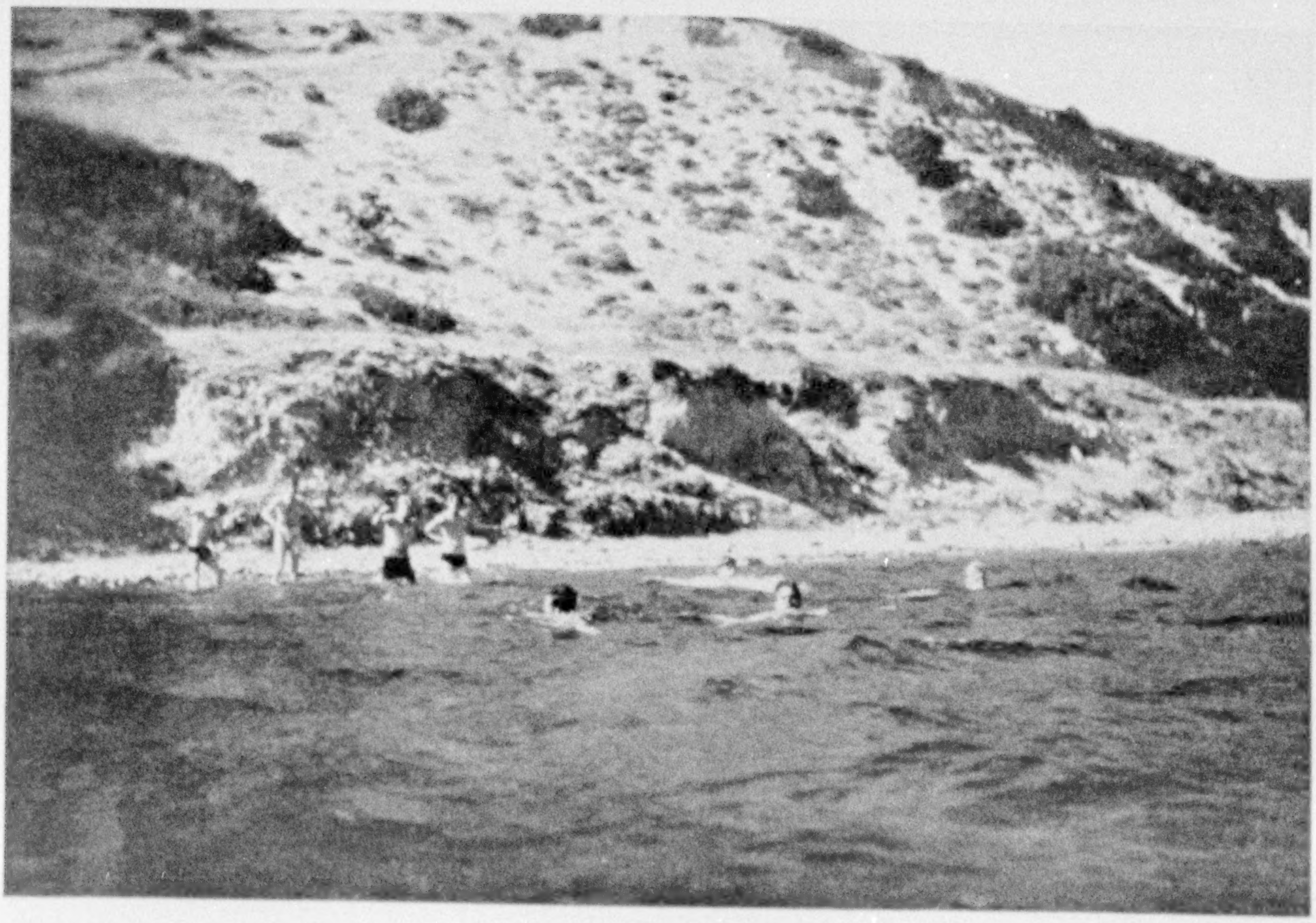
Photograph courtesy B. D. MacDonald

WHOLESALE CONQUERORS OF THE HELLESPONT

Every one of this group of eighteen young Americans, members of a College Men's Cruise of the Ægean, succeeded in swimming from Europe to Asia last August, and thereby laid to rest the age-old tradition that it is a feat next to impossible of accomplishment (see, also, illustrations on opposite page).

TWO AMERICANS SWIMMING THE HELLESPONT

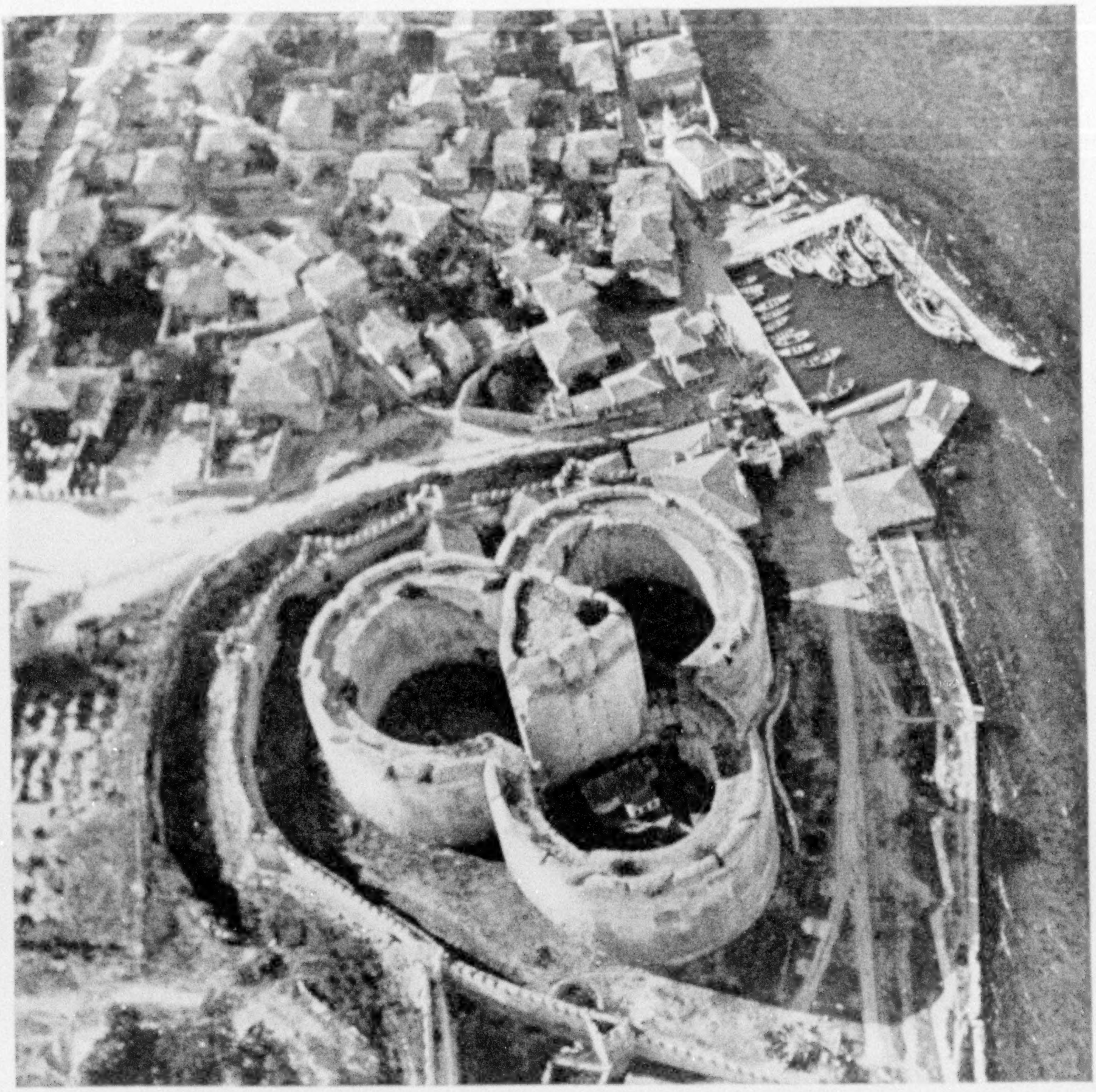
The slowest time that any of the 18 college men registered in their conquest of the Hellespont was less than an hour and a half. The swimmers in this picture are 200 yards from the European shore.



Photographs courtesy B. D. MacDonald

THEY PUT LEANDER QUITE TO SHAME

These young men described the swimming of the Hellespont as "no great feat" and "a good stunt for an afternoon's fun." So lightly did one of their number hold the accomplishment that after swimming across on his back in 54½ minutes he swam back free style, with only five minutes' rest, in 57 minutes.



KILID BAHR, ITS ACE-OF-CLUBS FORT AND ITS MINIATURE PORT ON THE DARDANELLES
(SEE TEXT, PAGE 728)

island found themselves windbound at the very mouth of the Dardanelles. They had to beach their ships near where the tumulus of Achilles was later to rise and there trade their products with the landsmen of Asia.

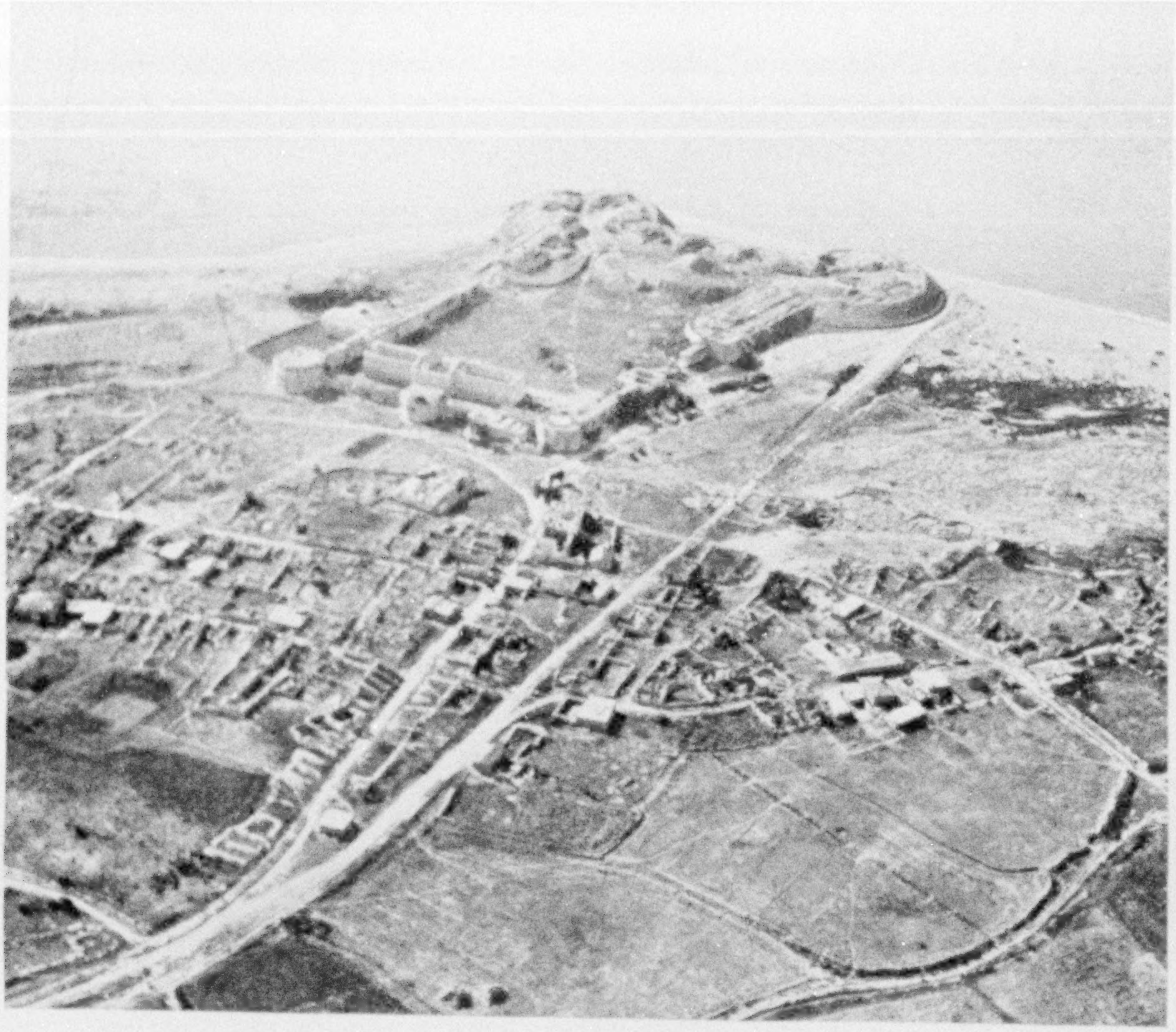
Before the time of Homer the Troad was the Nizhni Novgorod of its day, spreading its temporary shelters wide in an annual fair. Yet it was the poet, not the trader; the warrior, not the man before the mast, who gave this un-Greekly site its Hellenic fame; so that the Middle Ages, led by Benoit and his "Roman de Troie" (see text, page 729), crowded with 12th-century peoples and costumes, vibrated to the clamor of Homeric strife.

Boccaccio, Chaucer, and Shakespeare later fell under the spell of this puny plain, and even the long-undiscovered America was to produce a life of Helen in which the fair lady was to be anachronized into a mere modern. So did an epic poet make his lyre transform a trading post into a deathless battle site.

WE ATTAIN THE PERSPECTIVE OF POSEIDON

Beyond the island of Imbros, Pelasgian haunt, the mile-high hills of Samothrace show where Poseidon watched the fight around the walls of Troy. His eyesight must have been immortal!

"There the mighty Earthshaker held no blind watch, who sat and marveled on the war and strife high on the topmost crest of wooded Samothrace, for thence all Ida



KUM KALESSI, ON THE ÆGEAN, JUST SOUTH OF THE ENTRANCE TO THE DARDANELLES

According to legend, it was on the shores which this fort now guards that the Greek fleet was drawn up during the war with Troy. However, they are of more recent interest as the scene of desperate fighting between the Turks and the Allied expeditions which tried to force the Dardanelles in the World War.

was plain to see, and plain to see were the city of Priam and the ships of the Achæans."

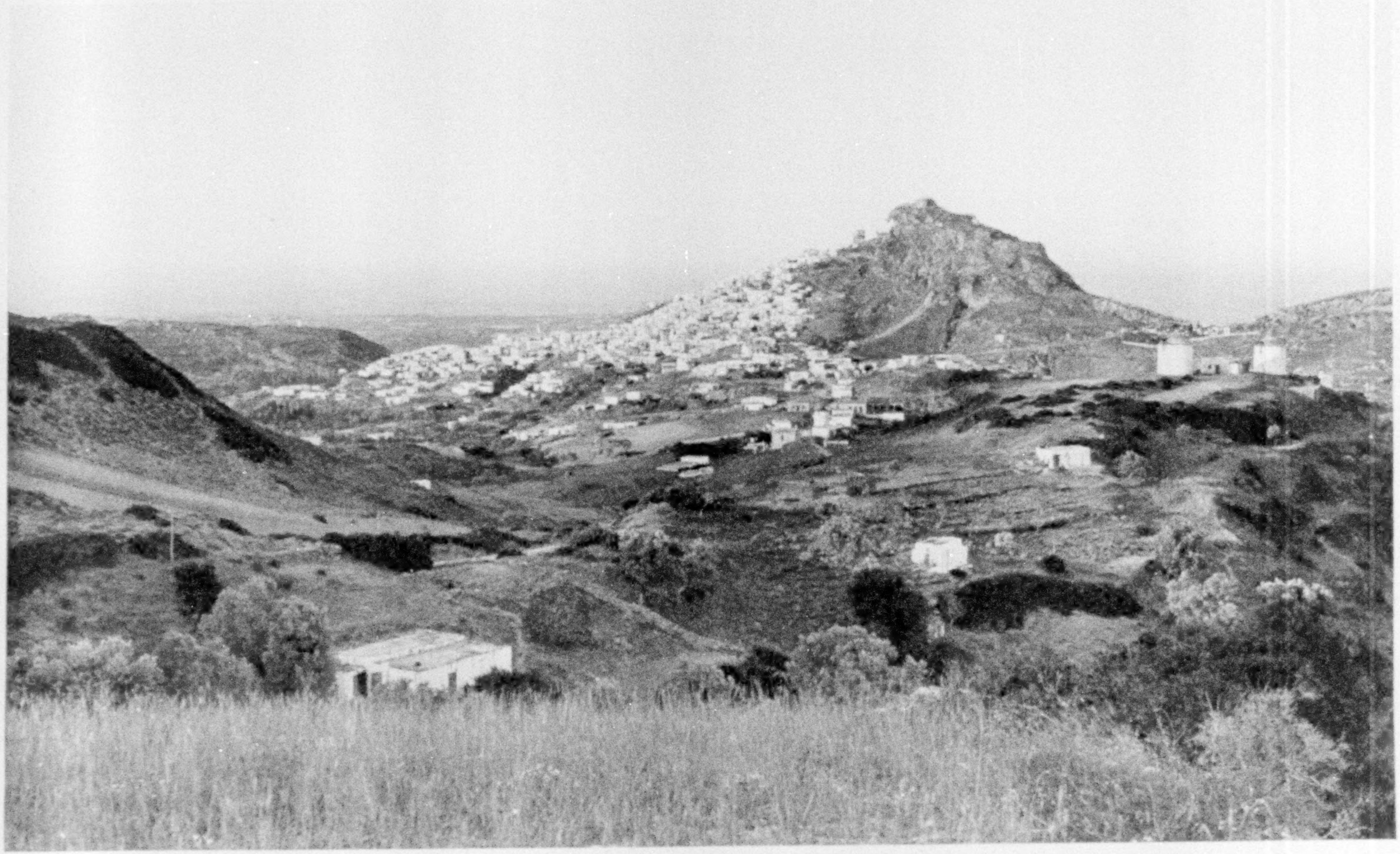
To us, following the very shore of the Troad, it seems as if the Earthshaker must have occupied a five-dollar seat for the "battle of the century," and with no radio set to help the television of his eyes. But even we cannot see Mount Ida, which is lost in the clouds.

The whole outline of Tenedos surrounds us, its central portion cultivated, its shoreline notched by bays to which the Greeks withdrew, leaving the Wooden Horse outside the Trojan walls. Only a narrow strait separates it from the mainland, and to-day it belongs not to a maritime nation, but to the descendants of continental nomads. But, seagirt as it is, one can understand why its fate was so bound with that of the navigators of the Ægean that it was long an Asiaward outpost of the Delian League.

LESBOS DESERVES THE DESCRIPTIVE FERVOR OF SAPPHO

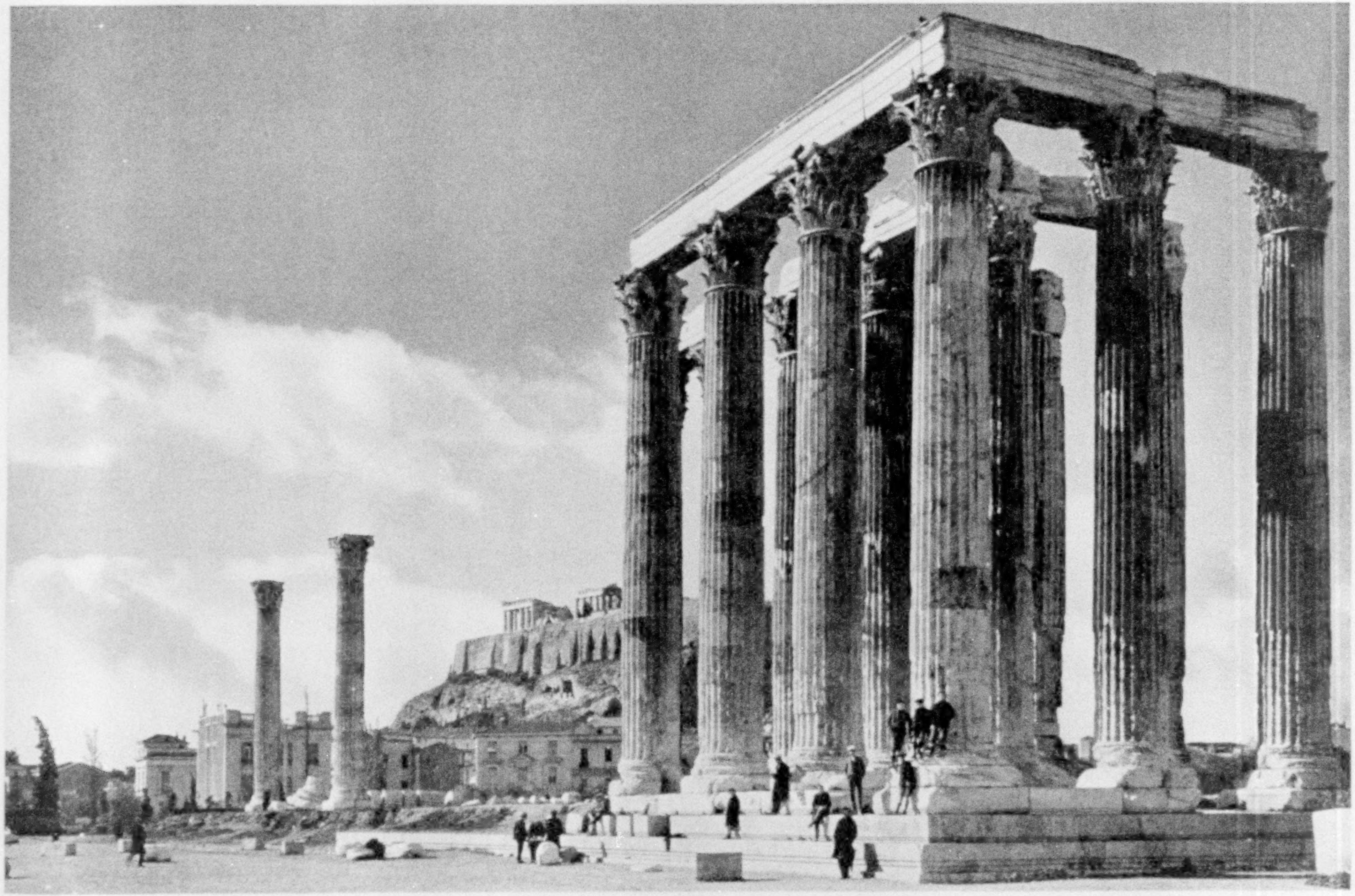
There is no sign of the cave in the sea where Poseidon stabled his steeds between Tenedos and Imbros, and we are too far away to see where Thetis played with the sea nymphs, this side of Samothrace. But, as we notice the grease streamlining a cover plate on one of our wing struts, we remember Icarus, with his wax-attached wings that melted in the sun, and hope that no similar fate will send us down to search for these submarine marvels.

Evidently our prow is heavy, for the



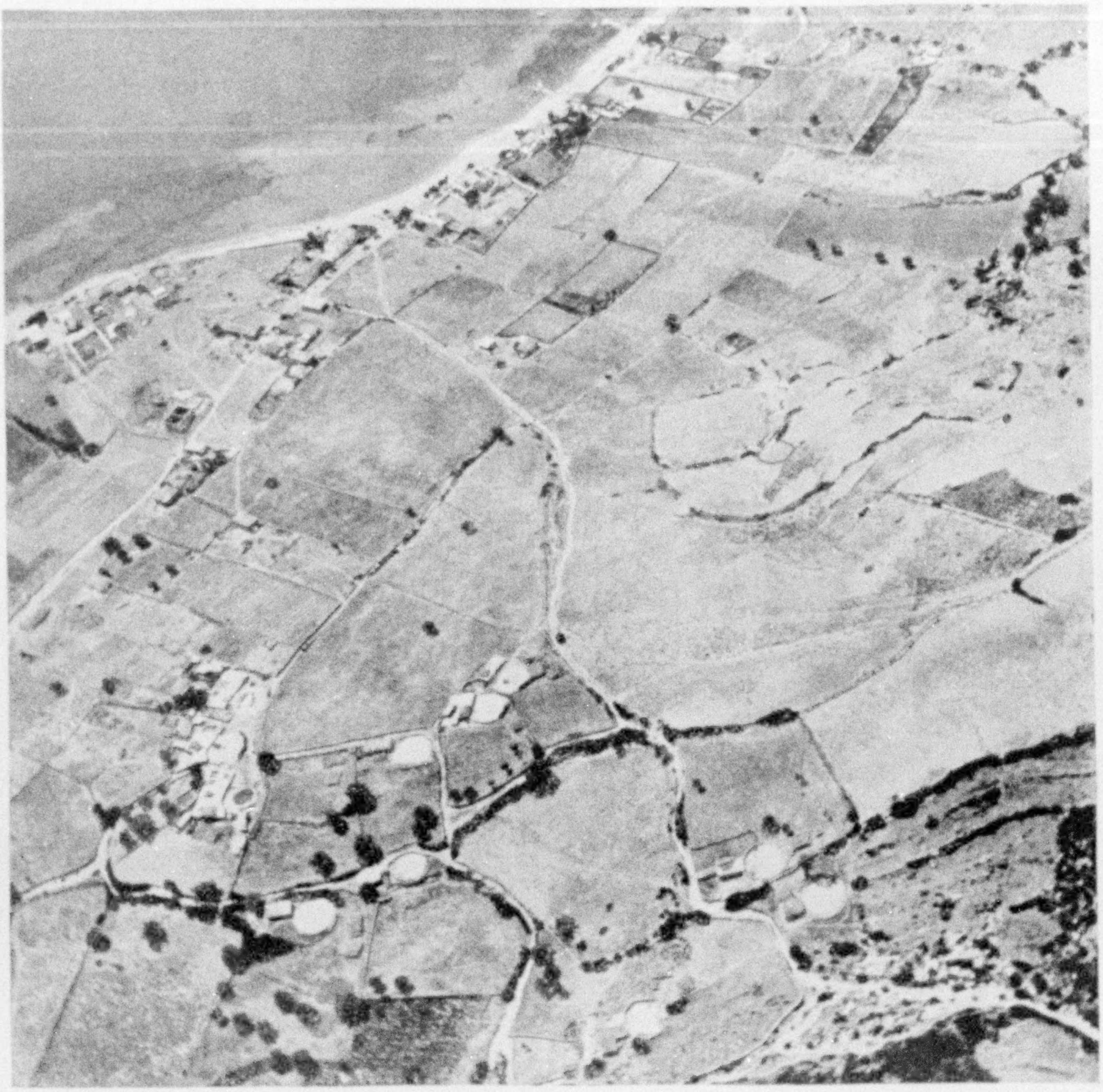
THE CASTLE OF SKYROS IS BETTER SUPPLIED WITH LEGENDS THAN WITH ROOFS

Most of the 3,000 inhabitants of the island live in this little town of whitewashed cubes stepping up a cliffside toward the castle. Here, according to legend, Achilles hid as a youth, in woman's attire, and here Theseus, King of Athens, slayer of the Minotaur and hero of many another exploit, met his death.



A GROUP OF GIGANTIC COLUMNS IS ALL THAT REMAINS OF ATHENS' TEMPLE TO THE OLYMPIAN ZEUS

One of the largest of Greek temples occupies a site that has been regarded as sacred since the dawn of history. Legend tells us that the last waters of the deluge disappeared at this spot, and that the grateful father of the new race of mortals founded here a temple. The columns which stand to-day belonged to a structure which was begun under the Athenian tyrant Pisistratus in the sixth century B. C. and was completed by the Roman Emperor Hadrian in the second century of the Christian era. In the distance rises the Parthenon-crowned Acropolis.



A VILLAGE ON THE GULF OF PETALI OVER WHICH THE CONSTANTINOPLE-TO-ATHENS PLANE HOVERS AFTER IT HURDLES EUBŒA

In spring this landscape is a touch of emerald green, but after the crops have turned sere or are harvested it looks bare. The white circles are hillside threshing floors.

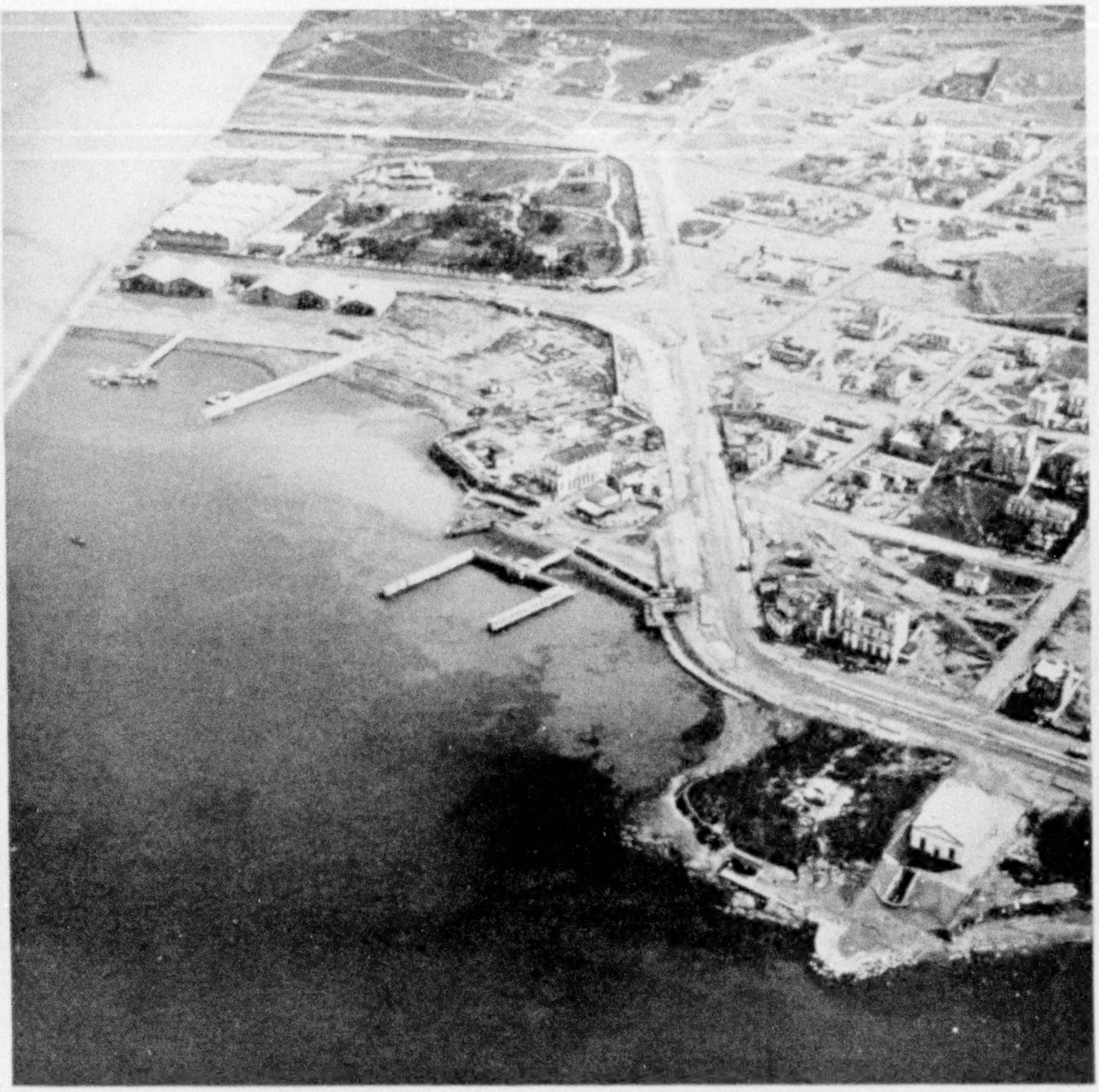
relief pilot has carried two heavy suitcases back into the hull. If we only had that weightless Winged Victory of Samothrace riding our prow, no doubt we should soar.

But there are pitch-black clouds ahead, their lower sides festooned with waving wisps of rain like Spanish moss. We swoop down to 2,000 feet. The long line of Lemnos fills the horizon at our right, and through the opposite window Lesbos (Mytilene) detaches itself from the flank of Asia Minor.

Only indistinct suggestions of land lie ahead, and my companion, his paper tossed aside, has composed himself for sleep. He misses rare drama, for sun and wind and cloud and sea weave an ever-changing plot about our plane. We are alone, as many a Greek in his cockle-shell craft was alone, in the immensity of the Ægean.

The rain against our windows sweeps backward in horizontal lines. Near the end of our mighty wing an aileron flutters lightly, as we ride the twisting currents of the air. Now Hagiostrati, kindled by an inquisitive sun-ray, leaps out from the blackness of the wave-ermined sea.

Skyros shoulders her blood-red, craggy cliffs toward us, and beneath our plane is a rainbow curved into a complete circle between us and the waves.



Photograph courtesy of Chief of Naval Staff, Athens, Greece

AT PHALERON THE CITIZENS OF ATHENS ENJOY SEA BATHING

Before the time of Themistocles the Athenians were not a trading people. The victor of Salamis turned their eyes and minds toward the sea and built Piræus to replace the commercially less desirable adjacent harbor of Phaleron.

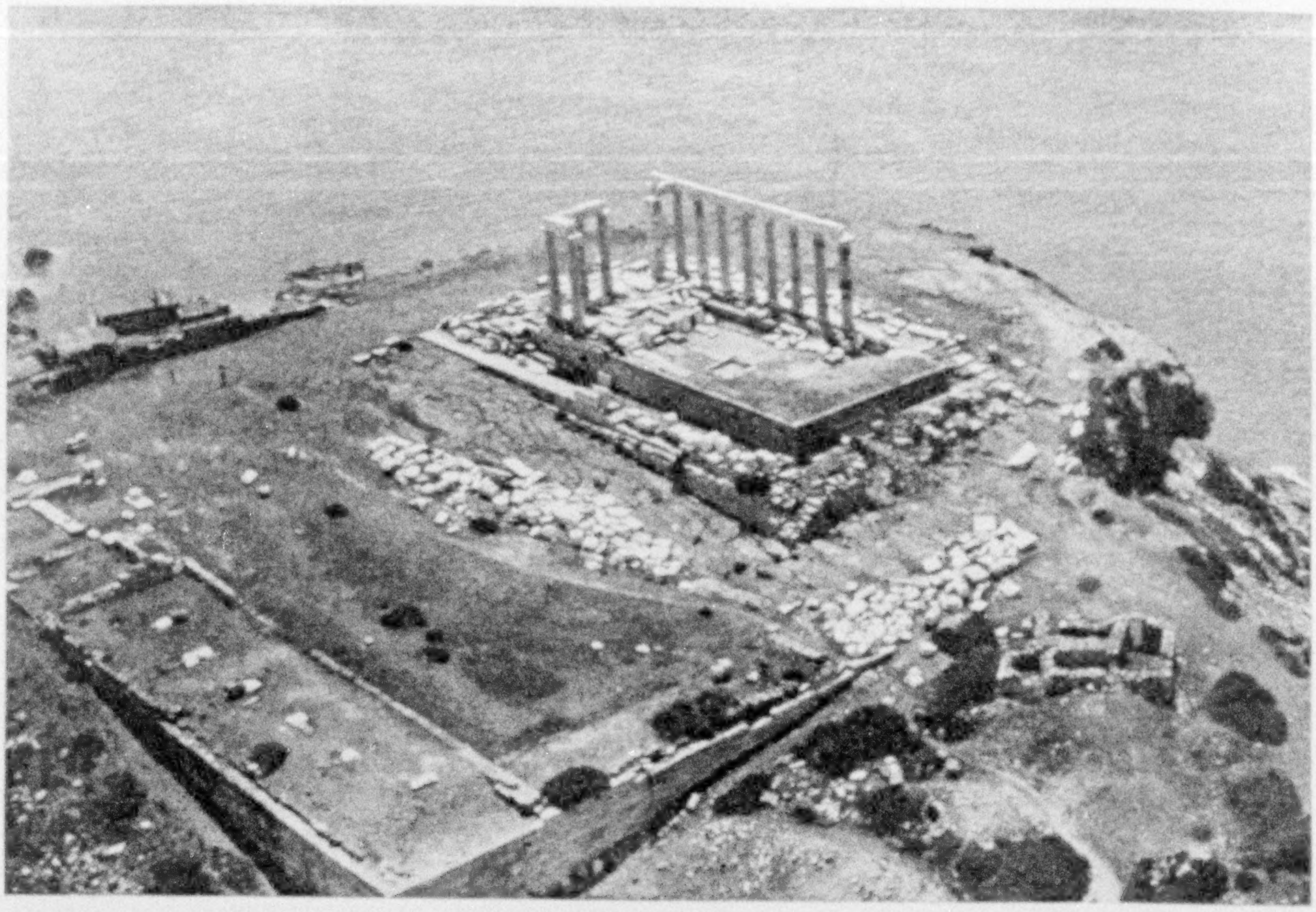
When we have been gone three hours an Acropolislike plateau on Eubœa shows itself. For the first time on our voyage we drive directly toward the land, find a low, narrow pass above cultivated fields, salmon pink amid gray rock and lush green and dotted with circular stone threshing floors near the Gulf of Petali (see illustration, page 736).

WE SIGHT THE PLAIN OF MARATHON

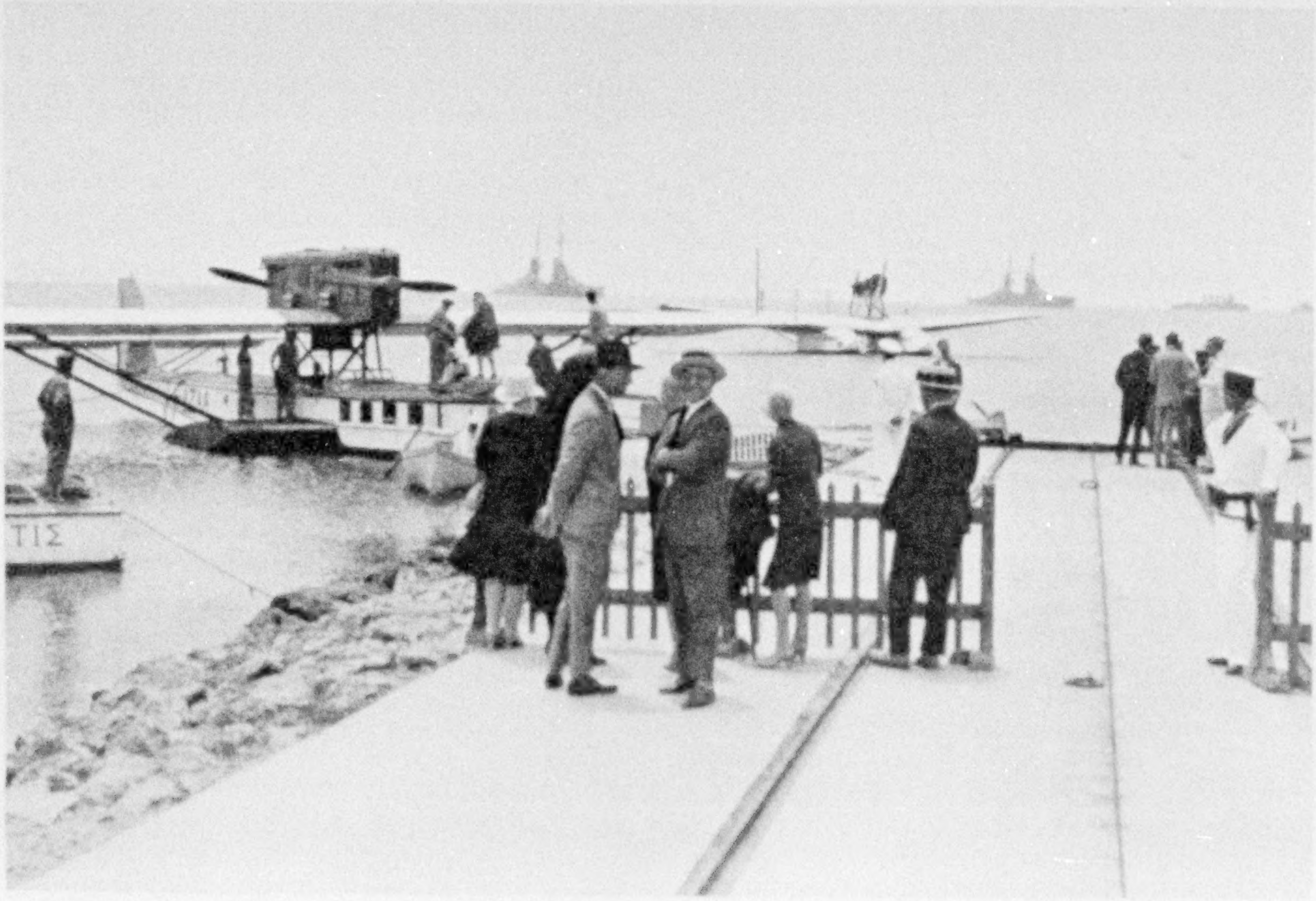
Then comes the supreme thrill; for there, sweeping round in a perfect curve like a gold-edged scimitar laid against the blue, is the Plain of Marathon. Hoary-headed Parnes looms beyond, and Pentelicus, neighbor of Athens and mother of her marbles, suggests how short a flight remains to us; yet how long that run for Phidippides, bringing news that the Medes and Persians were in flight and that Miltiades had won!

A wheel of spokelike roads, cutting the fertile Mesogaias, centers in Markopoulon. At least a dozen pleasant villages are in sight at once, pearl gray, amid crop- and plow-stippled fields pushed to the limit of man's endurance against the dull skeleton of Attica.

We are over the Saronic Gulf now, with opalescent tints showing on an oyster-shell-shaped beach. What seems to be the

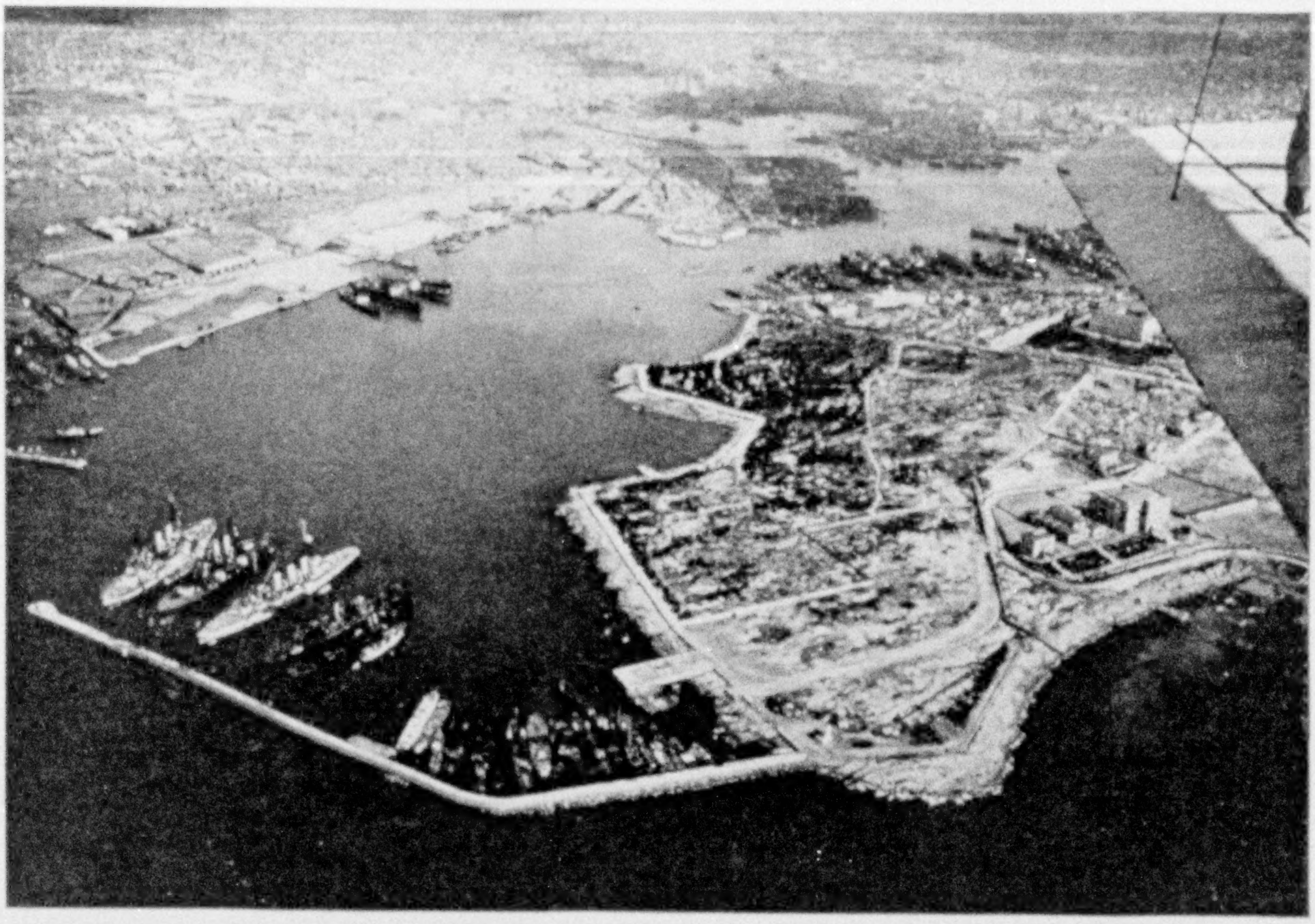


WHAT REMAINS OF POSEIDON'S TEMPLE AT SUNION



THE ATHENS-TO-CONSTANTINOPLE EXPRESS READY FOR ITS NORTHWARD FLIGHT

In the foreground is the barrier beyond which only passengers may go. A motor boat is about to tow the plane to open water. Passengers are entering the thousand-horsepower, ten-passenger hydroplane, equipped with two Isotta Fraschini engines, each similar to that used by Commander Francesco de Pinedo in his transatlantic flight. Farther to the right a Savoia plane with two cabins rides at anchor. The Italian fleet is in Phaleron Bay.



Courtesy of Chief of Naval Staff, Athens, Greece

THEMISTOCLES WAS FATHER TO THE PORT OF ATHENS

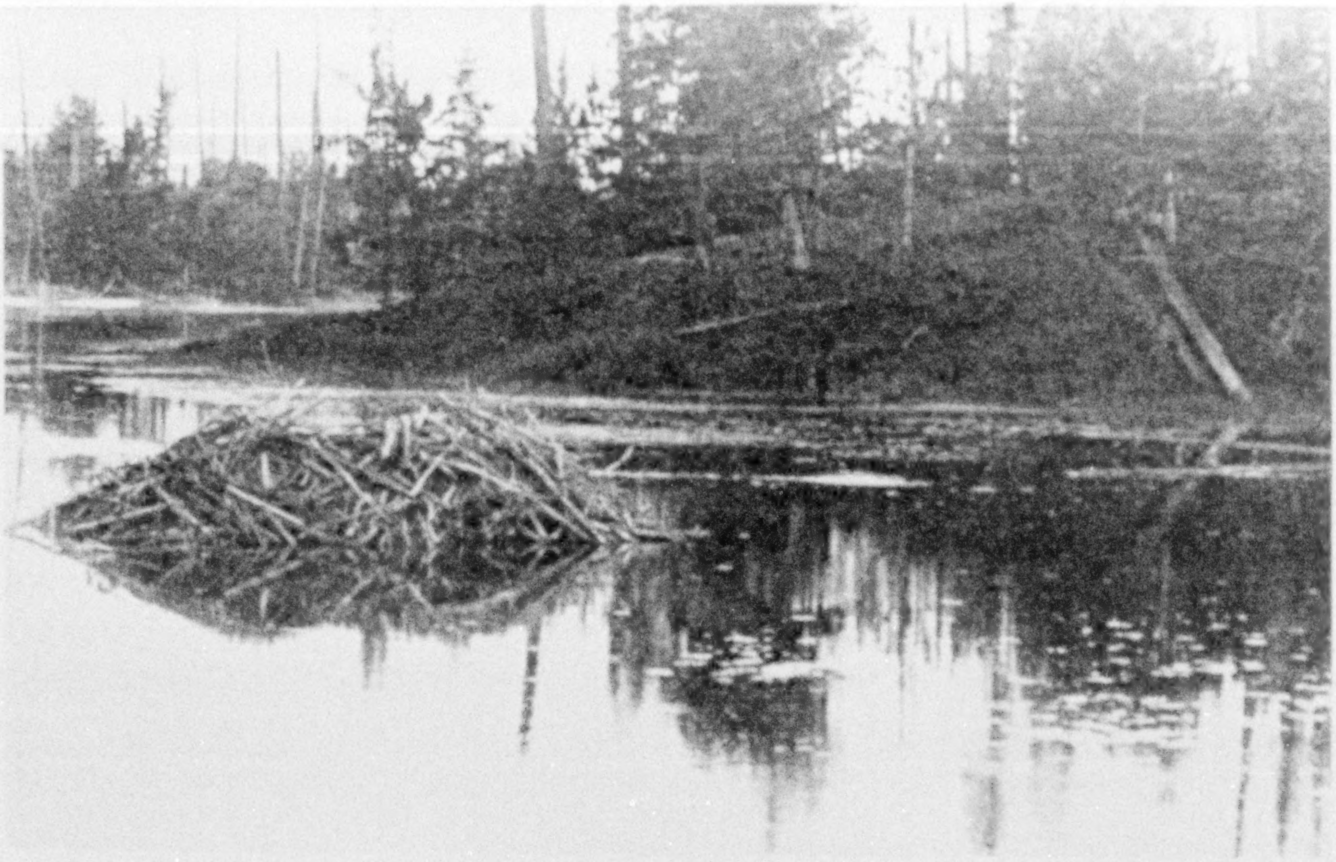
Piræus was built when the great admiral aroused the naval consciousness of the Athenian people, five centuries before the Christian era. After the rout of the Persians at Salamis, where the Athenians avenged the death of the heroic Spartans under Leonidas at Thermopylæ, the project of building a safe harbor was pushed to a conclusion, and from that time to the present day Piræus has transacted most of the commercial business of Athens.

mainland at our left is really the island of Salamis. From Marathon to Salamis, a ten-year struggle for the Persians, and we have made it in the sweep of an eye!

A brightly tinted new town, its landscape gardening reduced to the proportions of a painting, grows under us as we descend. Our shadow, which took the lead at the turn, is racing along the black trail of a motor road. Little Lykabettos spears up to the right, and the Acropolis begins to assume a fraction of its wonted dignity, as the very heart and center of Greek life.

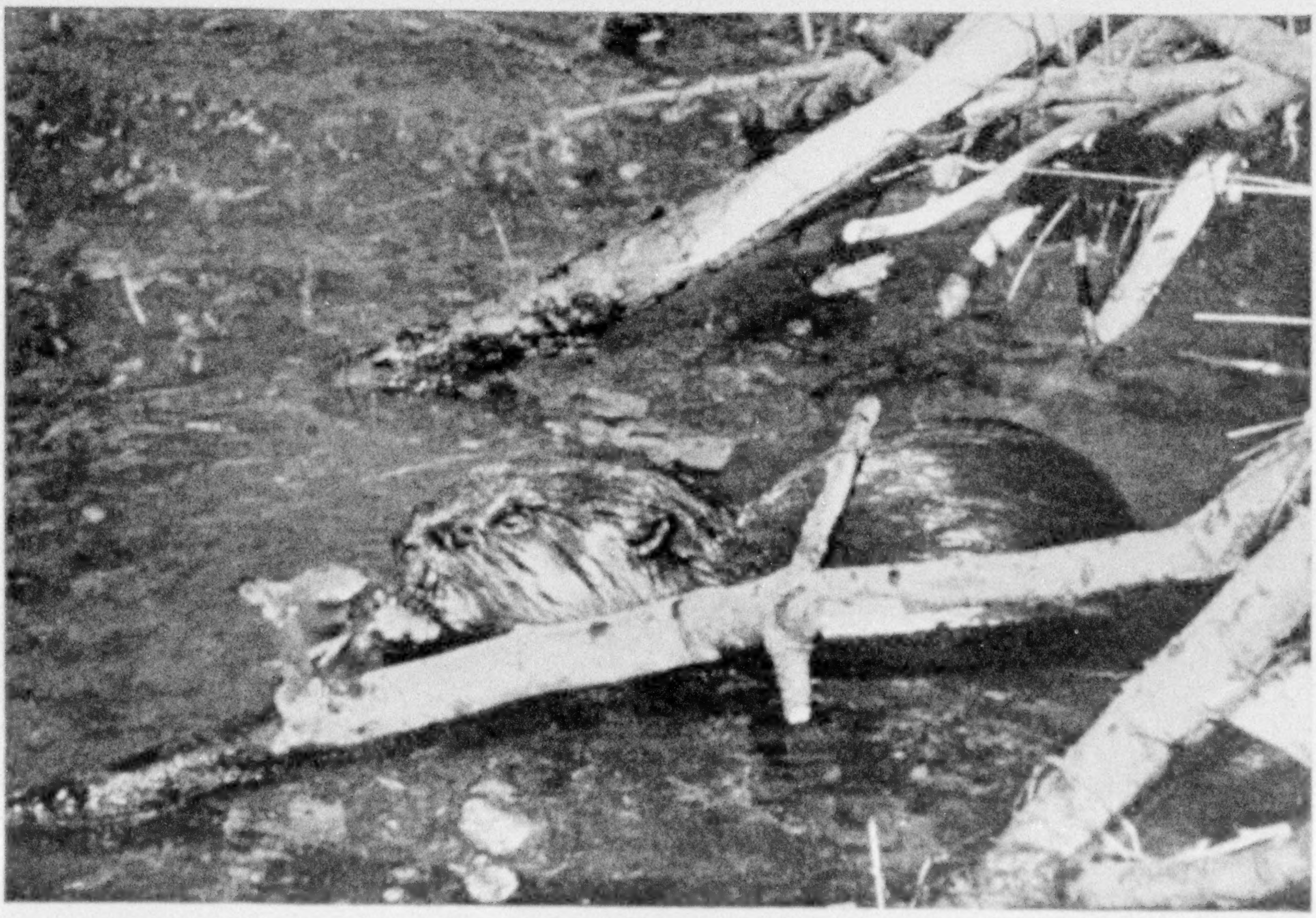
There is a bus terminus, and down we come, flashing past new villas and deserted pleasure piers. One final glance at that historic plain between Parnes and Hymettos and down we splash, like a duck, in Phaleron Bay, to the east of Piræus.

Notice of change of address of your NATIONAL GEOGRAPHIC MAGAZINE *should be received in the office of the National Geographic Society by the first of the month to affect the following month's issue. For instance, if you desire the address changed for your February number, the Society should be notified of your new address not later than January first.*



A MICHIGAN BEAVER HOUSE

Above the point of land on the right, marginal willows, alders, birch, and poplar step upward to plateau conifers and hardwoods, affording varieties of edible bark and building material for dam and habitat. A beaver house shelters a single family.



THE BEAVER'S HOME HAS A VESTIBULE

To the initiated the *porte-cochère* of a beaver house is well defined. Visiting muskrats know that here the way in is between the fresh-barked sticks and three feet down. In this surface lobby the young sport and take siestas in the sun.

MICKEY THE BEAVER

An Animal Engineer Performs for the Camera as a Star in the Activities of His Species

By James MacGillivray

Educational Division, Michigan Conservation Department

With Illustrations from Photographs by the Author

PIZARRO, in 1534, looted the Inca silver mines, and about the same time Jacques Cartier found the beaver in the St. Lawrence region of North America.

The fur of this animal was the greatest source of immediate wealth the New World afforded. Perhaps the beaver had as much to do with American wars of the French and English as land acquisition. For more than a century the beaver pelt was a common unit of barter from New York to Quebec.*

Within the limits of Michigan there are probably more beavers to-day than in any other region of equal area. It is conservative to estimate the number above the Strait as 20,000. Almost exterminated in the Lower Peninsula by 1900, they have notably increased in periods of closed seasons.

MICKEY IS FOUND AFTER A SEARCH OF 15 YEARS

That Mickey the beaver (from the Chippewa *a-mic*) was born in Michigan, unless he migrated from Wisconsin, about 1900, is my guess, for his whiskers and the once rufous-red of his face have turned gray from age. My estimate of his weight is about 100 pounds. This brings him within 11 pounds of the record I have seen in print. He is twice as large in appearance as any other beaver I have met, but his great ancestor of the Pleistocene Age had it over him in size about five times.

After 15 years of quest for a unit of the species who would act before a moving-picture camera, I found Mickey in the Two Hearted River region of Michigan, 30 miles west of the stream's entrance to Lake Superior. In the search I had visited 52 locations having dams and houses. At all but one I obtained with the camera glimpses of beavers abroad in daylight, but only Mickey displayed true histrionic talent. He liked to perform.

Mickey merited regard for giving me an unusual picture, but he won my genuine affection with his substitution of real wonders for the fairyland of boyhood which the scientist dispelled.

The beaver does not carry building material on his tail. He does not use his tail as a mason would a trowel. There is no "boss" beaver directing a colony at work.

Gone is the marvelous beaver world, with its wizardry, which I credited as a child. But a new domain, replete to me with amazing facts, more than compensates for the loss of boyish concepts. Thank you, Mickey!

Before I bring you to Mickey's home, a pond half a mile in length, converted from a stream not 10 feet wide, let me present my furry friend the beaver as an observer with no scientific pretensions has seen him through years of earnest scrutiny.

A BEAVER COUPLE IN SEARCH OF A HOME

If you should come upon two beavers of 40 pounds or thereabout, traveling overland and in Indian file, in late August or early September, you might well assume that they were newlyweds two years of age and looking for a lake or pond in which to build a habitation.

If this young couple located pond water of the proper depth, surrounded with the right complement of trees with edible bark — poplar, birch, willow, ash, and alder — they would construct a hivelike home. Building material might be wood and mud, or stones and mud, or all three. Starting the base on the pond floor with a diameter of 12 to 20 feet, they would taper it, conelike, to a rounding apex 3 to 6 feet above the surface. The general design

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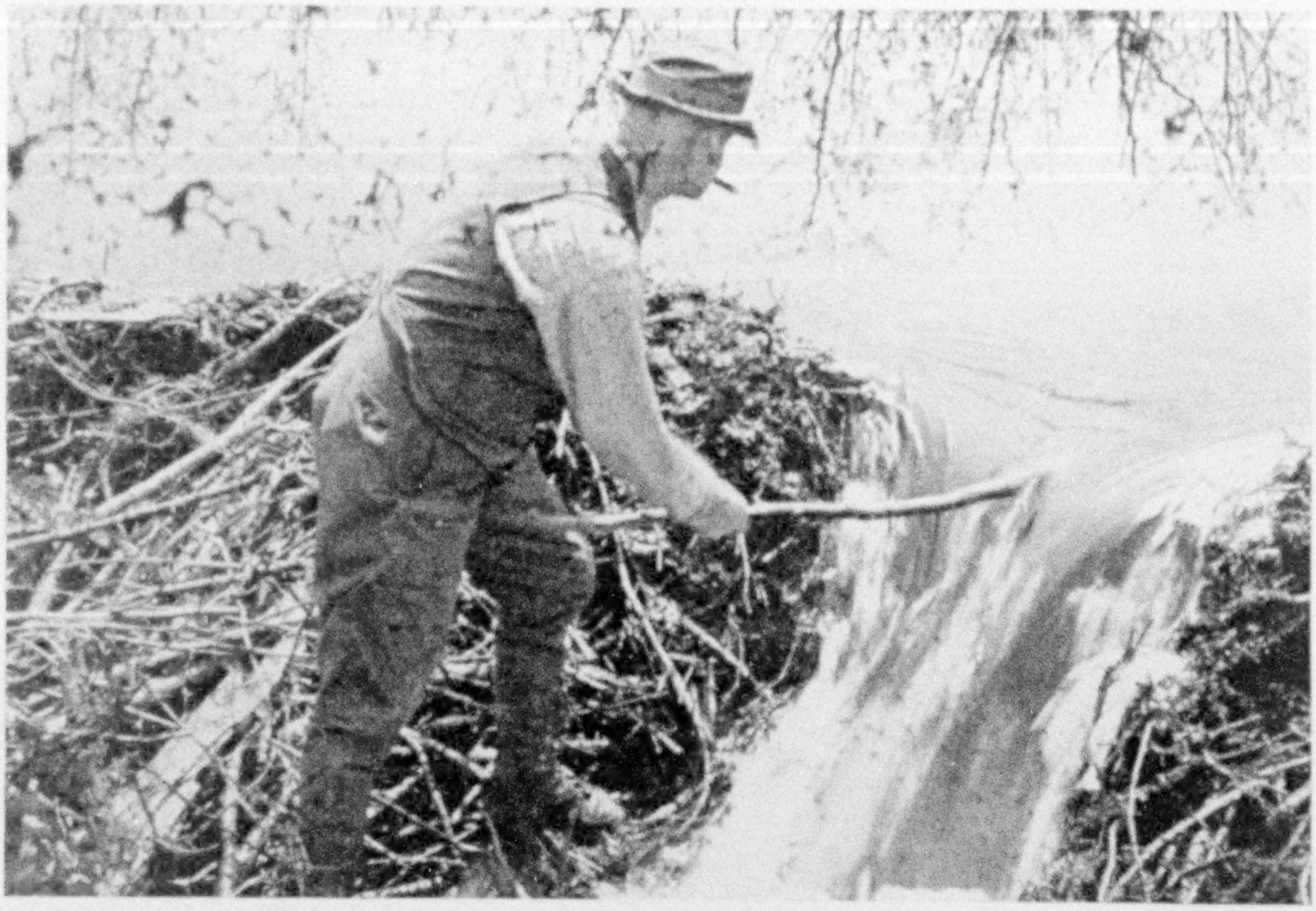
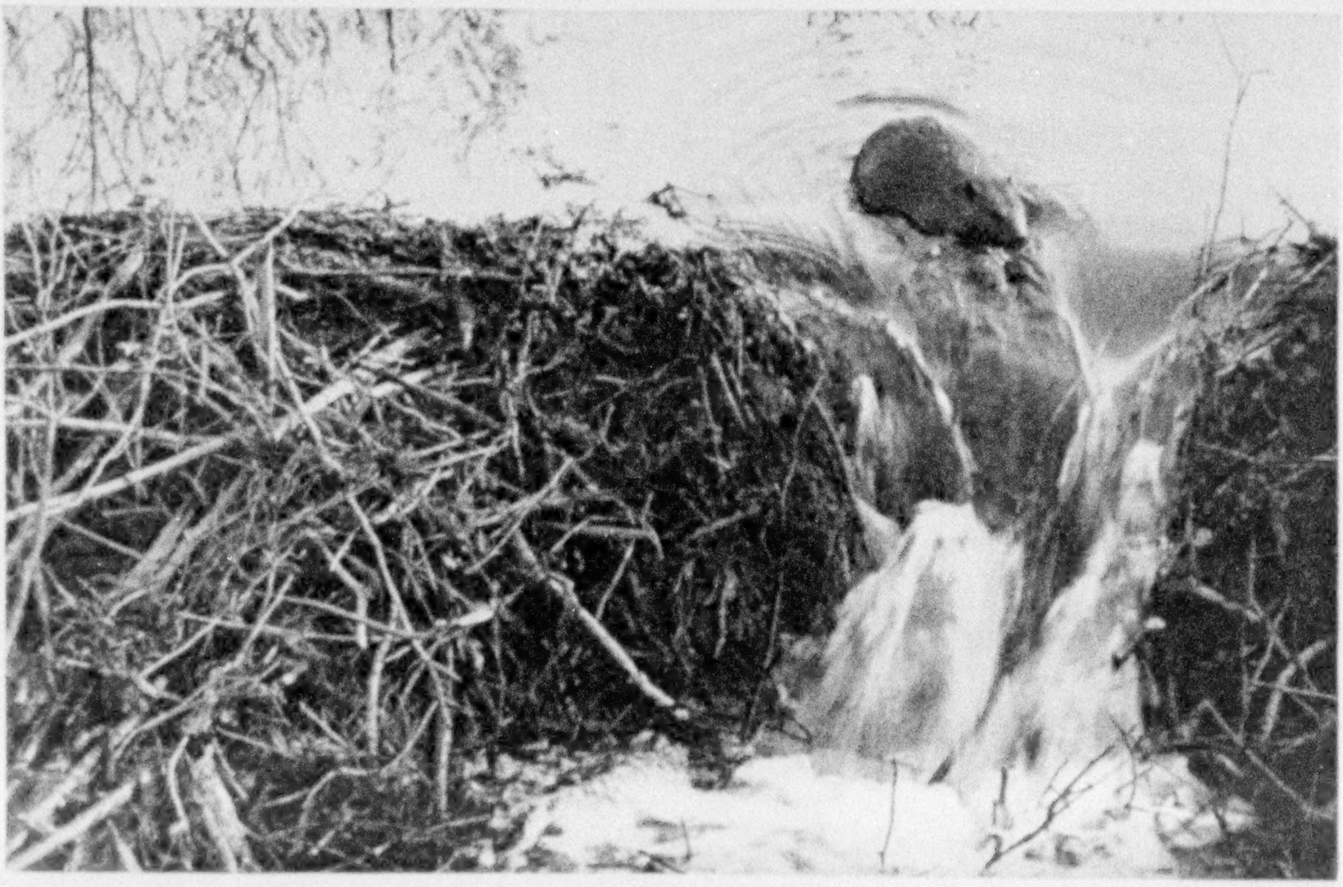
* See, also, "Michigan, Mistress of the Lakes," by Melville Chater, in the National Geographic Magazine for March, 1928.



BY LOWERING THE POND LEVEL THE BEAVER IS LURED TO WORK

A breach in the dam, 10 feet long and 2 feet deep, causes a drop of 12 inches in the water level and induces Mickey to appear for repair work. He responded 18 successive afternoons. An hour and a half sufficed him to stop the flow with superficial facing. In the morning repair was complete (see text, page 750).



SURVEYING THE DAMAGE DONE

Mickey's initial proceeding with respect to his dam troubles is carefully to inspect the wrecked area. Pausing at times, often with body erect, he seems to be deciding what is needed here or there for mending.

varies. Sometimes the house is half a cone set against a bank elevation (see page 740).

There being no ready pond water, or all such places in their locality being preëmpted by other beavers, coincident with food supply, it would be up to the newlyweds to convert a flowing stream or elevated seepage into a residence pond.

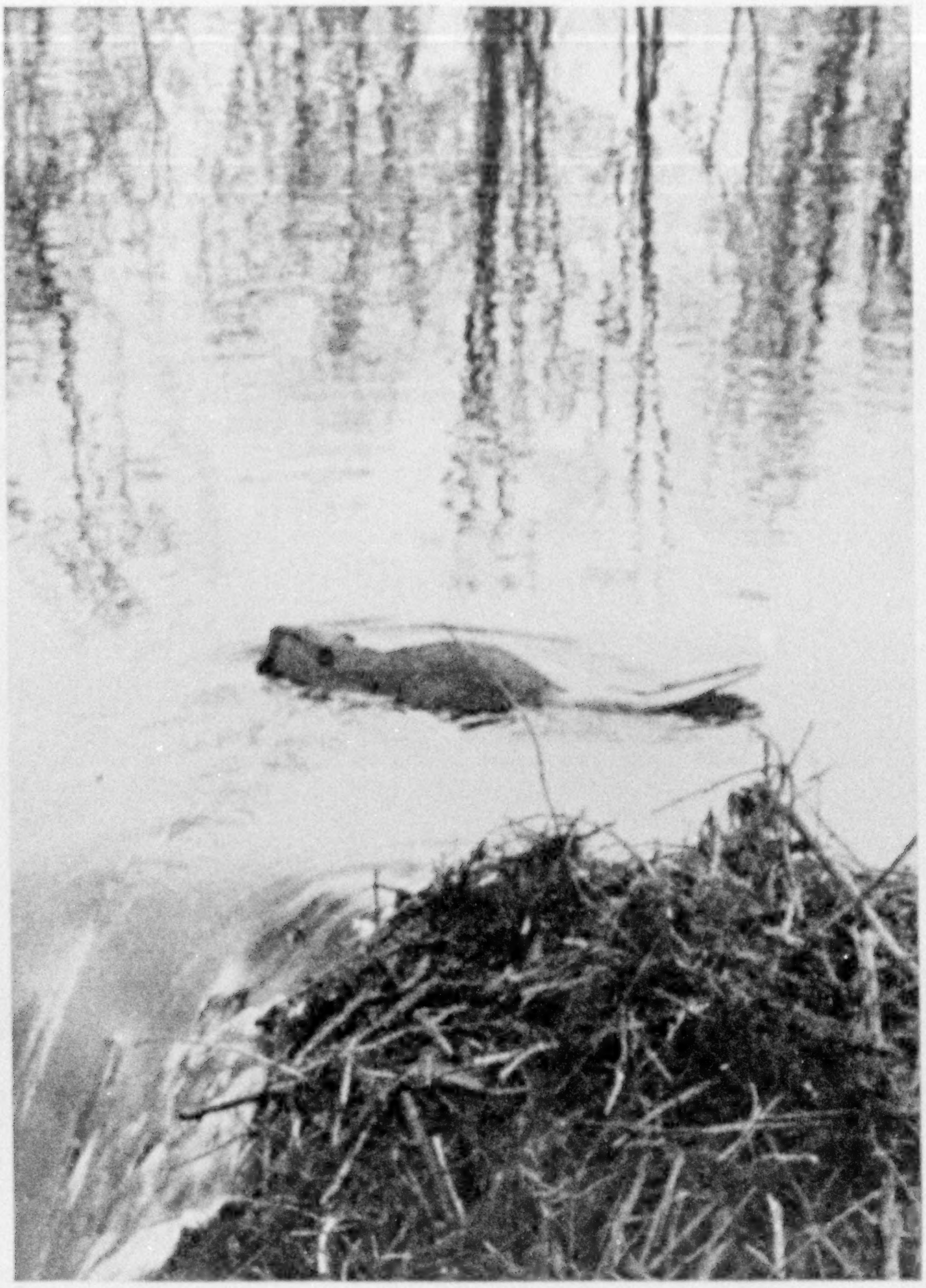
THE NEWLYWEDS CREATE A RESIDENCE POND

The beavers are now considering a sluggish stream, shallow at this time of the year and with no evidence of past freshets. Perhaps they have assurance from local signs that they will have no excessive floods to guard against here. But, being cautious, they explore the stream above. Satisfied finally of the nature of the flow, they content themselves with an ordinary dam structure, built at a straight or careless angle and narrow in bulk.

Had they selected a stream indicating periodic floods, more precaution might have been taken with their structure. It might have carried greater wall bulk, with a base extending in a descending gradient, downstream from the wall, for a distance of several yards. More clever engineering here might be the crescent form of construction with the convex upstream. This is recognition of a principle used by human engineers. Up to a certain measure the pressure of water above would tend to strengthen the dam.

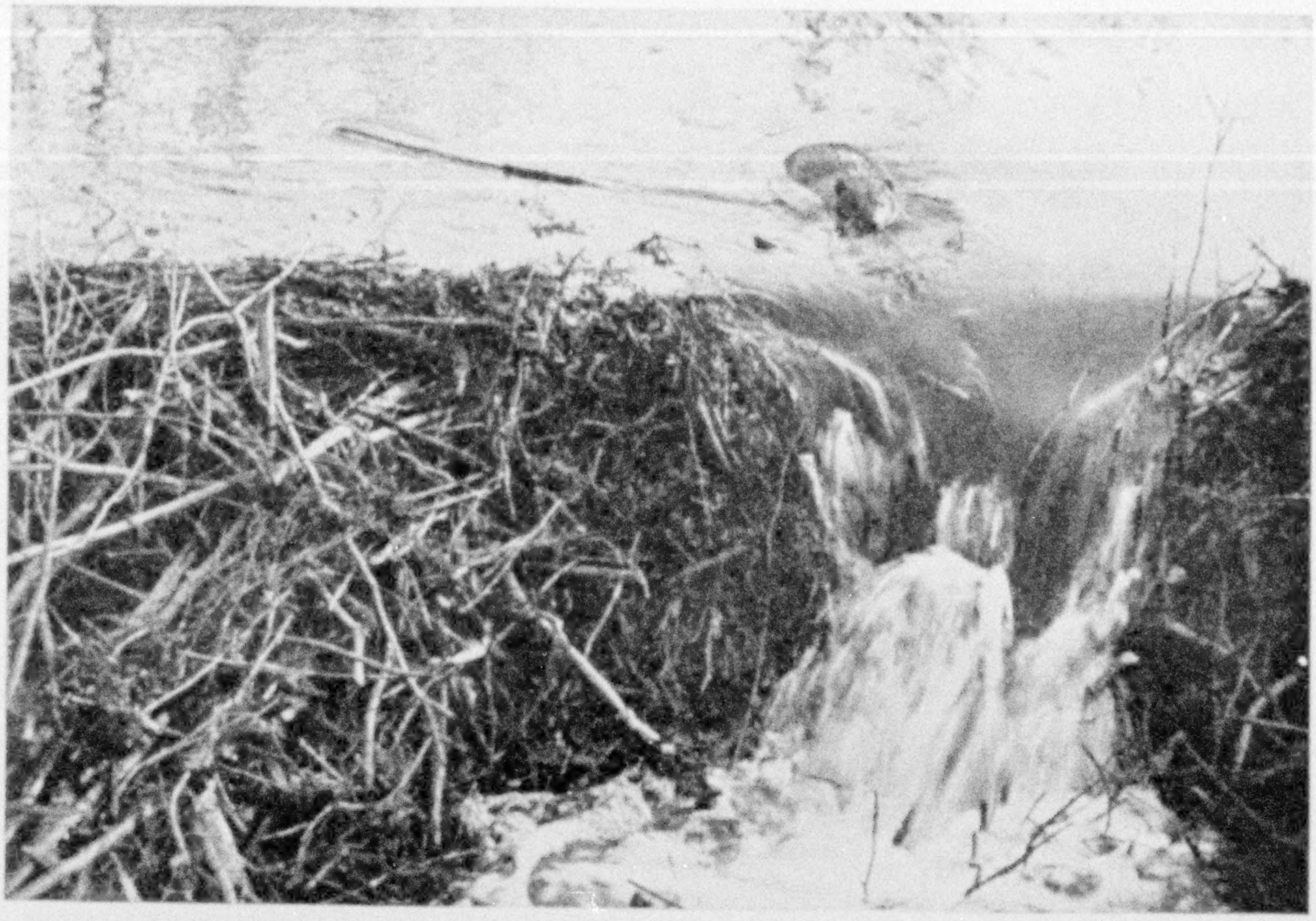
As an amplified precaution, where mighty floods are indicated as possible, the beavers may build a replica of the first dam 50 yards or more below it. Comes a flood! It appears that the beavers provide a weak spot in the dam for exigency of a flood-forced vent. This provision is made near the center of the comb, where it is most liable to fracture. Thus the interval between the two dams is at times early filled with water, which serves as a buttress for the upper dam, while the lower dam has but to sustain water with its current velocity broken.

More engineering acumen; the crest of the lower dam is the crown of a face extending upstream several yards as it slants to bottom anchorage. This slanting face



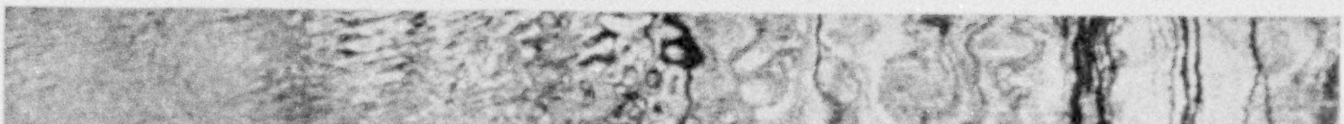
BRINGING IN THE STUDDING

Mickey starts repair work with saplings of small diameter, 15 to 20 feet in length. Most of the trees are fresh cut for the job, but old floating and sunken trees are also utilized. Mickey's broad tail is aiding in support of the water-logged piece he is bringing in for "studding."



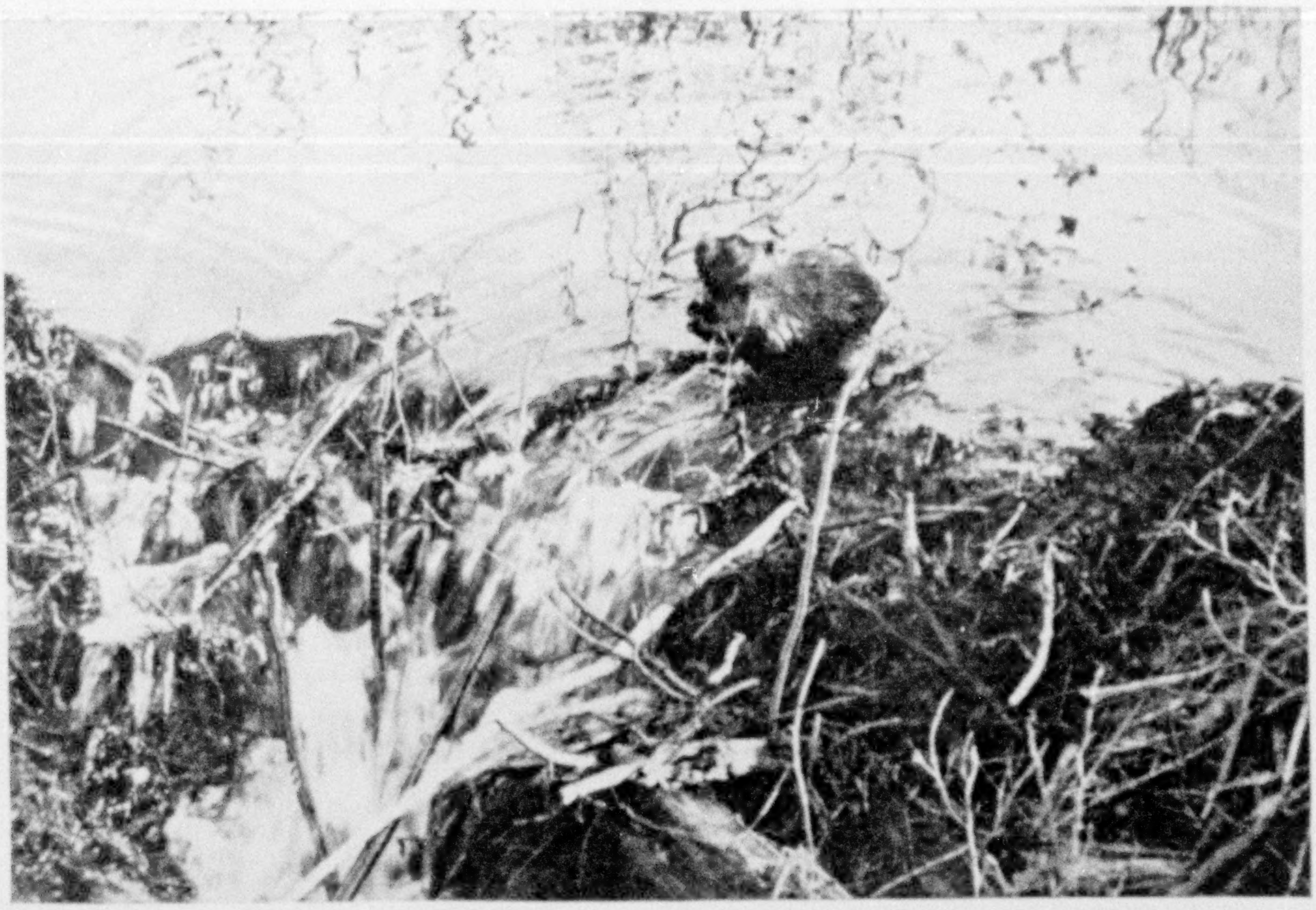
MICKEY TOWS THE STUDDING PIECES TO THE BREACH

He allows them to float down, the butts resting on the creek bottom below. The old trunk here shown he tested for strength after he put it in place in the dam.



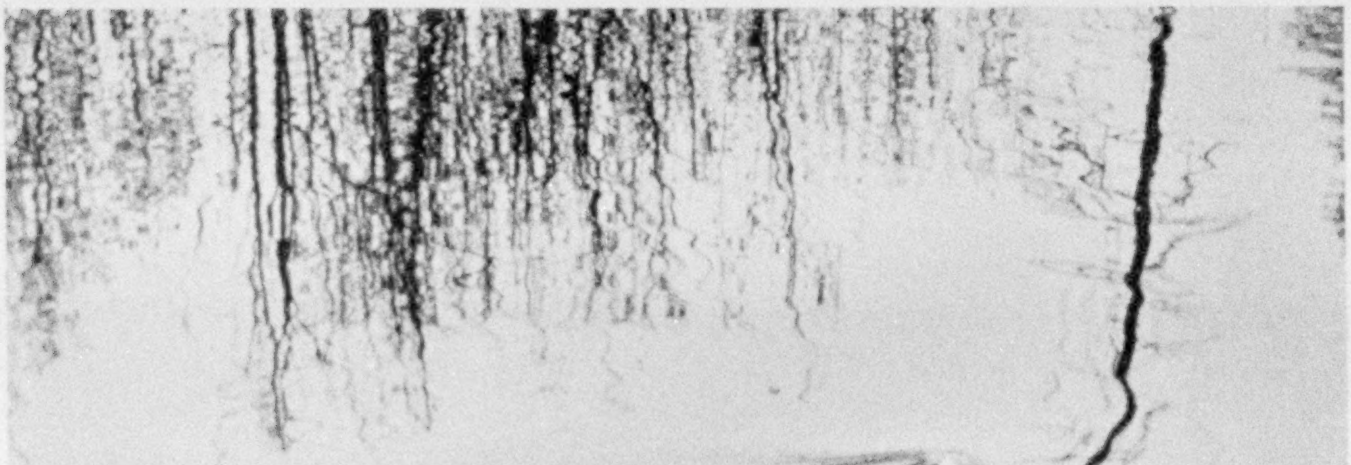
HURRYING WITH THE FINAL PIECE OF FRAMEWORK

A strong green sapling, lined with the other studding, stabilizes his framework of repair. The arabesque tracings in the picture are tree shadows distorted by ripples.



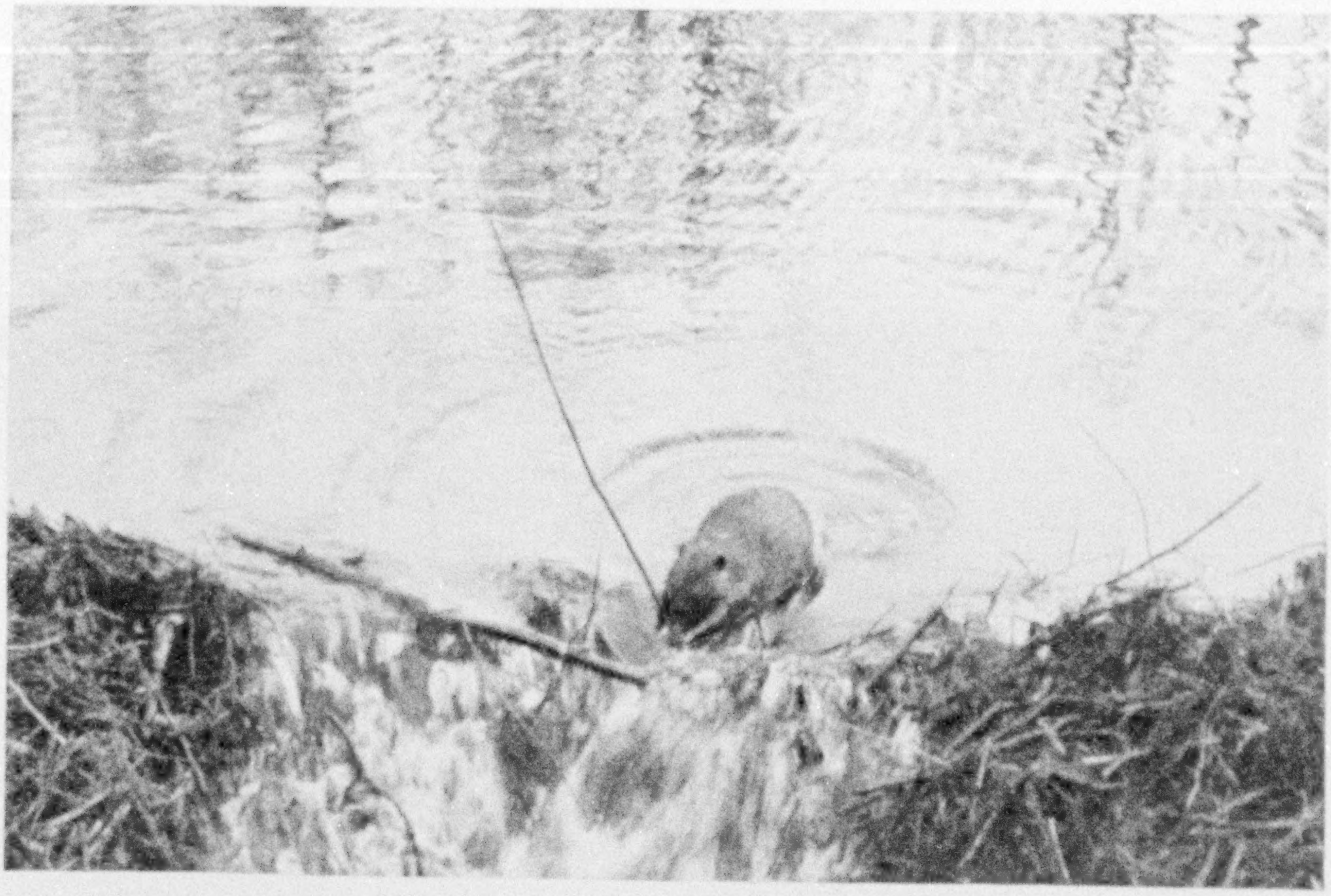
TRIMMING THE STUDDING TOPS

Mickey assumes an attitude of "saying grace" before dining on tender bud-ends of green studding tops; then he trims the branches for utilization lower in the breach.



FLOTSAM IS USED IN STEMMING THE FLOW

After the studding is placed and trimmed, Mickey collects floating material to continue his repair work. His cache is at the left of the breach wall.



MICKEY NOW EMPLOYS PILING

Before using the nondescript material in his cache, the beaver drove seven small stakes vertically in the dam wall. These he trimmed at water level. They served to hold his odd material in place later. After inserting the stake point, he would grasp it high up with his molars and forepaws, driving with a downward surge of his body.

facilitates the flow of water up and over the structure, minimizing the flood's onslaught.

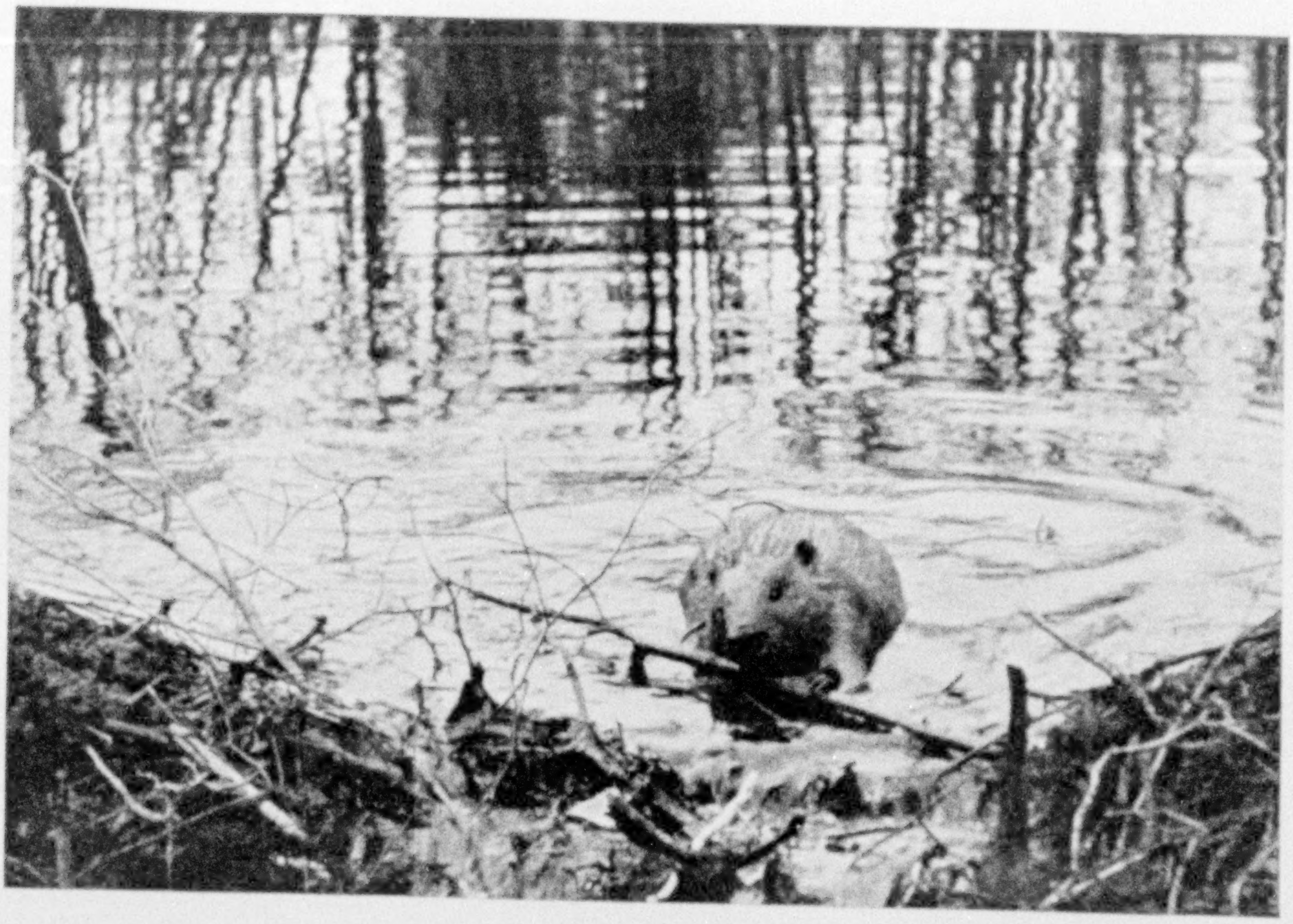
With a pond created, the couple builds the regulation home. But there is more food adjacent than a single family will require. So another couple builds in this pond, close up for sociability. Perhaps a third couple adds a bungalow. When the three families, working with one motive, but no director, have amassed in the pond sufficient winter food for all, they are apt to continue activity by covering all three of the houses with an embracing dome. This may be 40 feet in diameter at the pond bottom and 15 feet at the surface line, rising above the water 8 or 10 feet. This gives us the "colony" house. I have found but five of these in Michigan, all evidently the result of this mode of procedure. In every instance the dome comprised standing inundated trees, the brushy tops screening the mass from the camera.

In my findings, each beaver residence holds but one family, whether by itself or in colony. The number of young in a Michigan family appears to run from two to six, though most writers say three to eight. I have never noted more than six, but an old trapper in Keweenaw County told me of a family of nine young. He then qualified his statement by saying that poachers had taken the parents of three pups in traps in June, when the fur was valueless, and that an old lady from a pond above had adopted the orphans and added them to her own six.

BEAVERS INTERCHANGE HOMES

Born in late May or early June, the young are generally taken on an exploration outing by the parents toward the last of August. Meanderings of the family may cover a period of six or seven weeks. It is likely that the young learn much geography, topography, and engineering on their initial journey. Late September may find them domiciled in a home built by another family, miles from their place of birth. Annual interchange of habitat breaks monotony of location and is probably Nature's method of discouraging inbreeding.

As the beavers age, they are apt to



PLACING THE BINDER

At a certain stage of construction, Mickey seldom failed to obtain a green sapling of firm trunk, which he placed parallel with the recent gap and dam wall (see page 744).

maintain the same home year after year, but probably do not forego the annual outing. Single beavers of either sex may be traced in long wanderings. In trapper's parlance, these rovers are "bachelor" beavers.

ACHIEVEMENTS AND METHODS OF THE BEAVER

In the new wonderland created for me by Mickey and his tribe, it appeared to me:

That the beaver knows and makes use of water-tight clays in sealing the floors and walls of basin ponds, depending on seepage from highlands for water supply;

That he will tap adjacent streams or springs with canals, bringing additional water to his pond when his location stream-flow fails to supply it properly;

That he adjusts himself to varied conditions of environment, for the "bank" beaver, in a narrow stream with high bank confines, knows that no house construction could withstand the spring floods from melting snows, so by necessity he burrows for a home—he would be a "house" beaver under other conditions;

That he has a conception of man's superiority, indicated by the fact that, while he will fight to the death predacious animals which attack him when he is fast in a steel trap, he makes no resistance when the trapper appears on his rounds. The little front paws are raised above the head as if to fend a blow, and his beseeching, "please-do-not-hit-me" gaze worries the rugged man inured to sufferings of victims.

Swimming usually with strokes of his long hind legs, with feet webbed like those of a goose, on occasion he can develop terrific speed on the surface by sculling with his paddlelike tail. I observed this speeding once when a beaver sighted an imaginary enemy near him on one bank, and shot across the stream in retreat.

Again, when Mickey and I had become well acquainted, he twice entertained me with exhibitions of his sculling speed, coming back to survey me as if awaiting approbation of his accomplishment.

GETTING ACQUAINTED WITH MICKEY

My first glimpse of Mickey was in the late afternoon, at a distance of 200 feet. My companion and I, approaching the

BEAVERS, YOUNG AND OLD, ARE PLAYFUL

Love of frolic is often in evidence in the beaver's activities. He will stop en route with building material, releasing the stick he is towing, in order to frisk and dive. This plaza above his dam is Mickey's favorite playground.

pond against a light breeze to discount detection of our presence by scent, discovered him sporting in the open water that fronted his dam. He was gyrating rapidly in a small circle, driven by the tail, which appeared to revolve like the propeller of a boat (see illustration, page 754).

"If you want 'em to pose for you, talk to 'em. They know if your voice is kind, the same as you know a bird sings sweet," an old trapper had admonished me a few days previously. I tried out his formula. Mickey's response to my hello was a slap of his tail, sounding like the explosion of a giant cracker, as he dived.

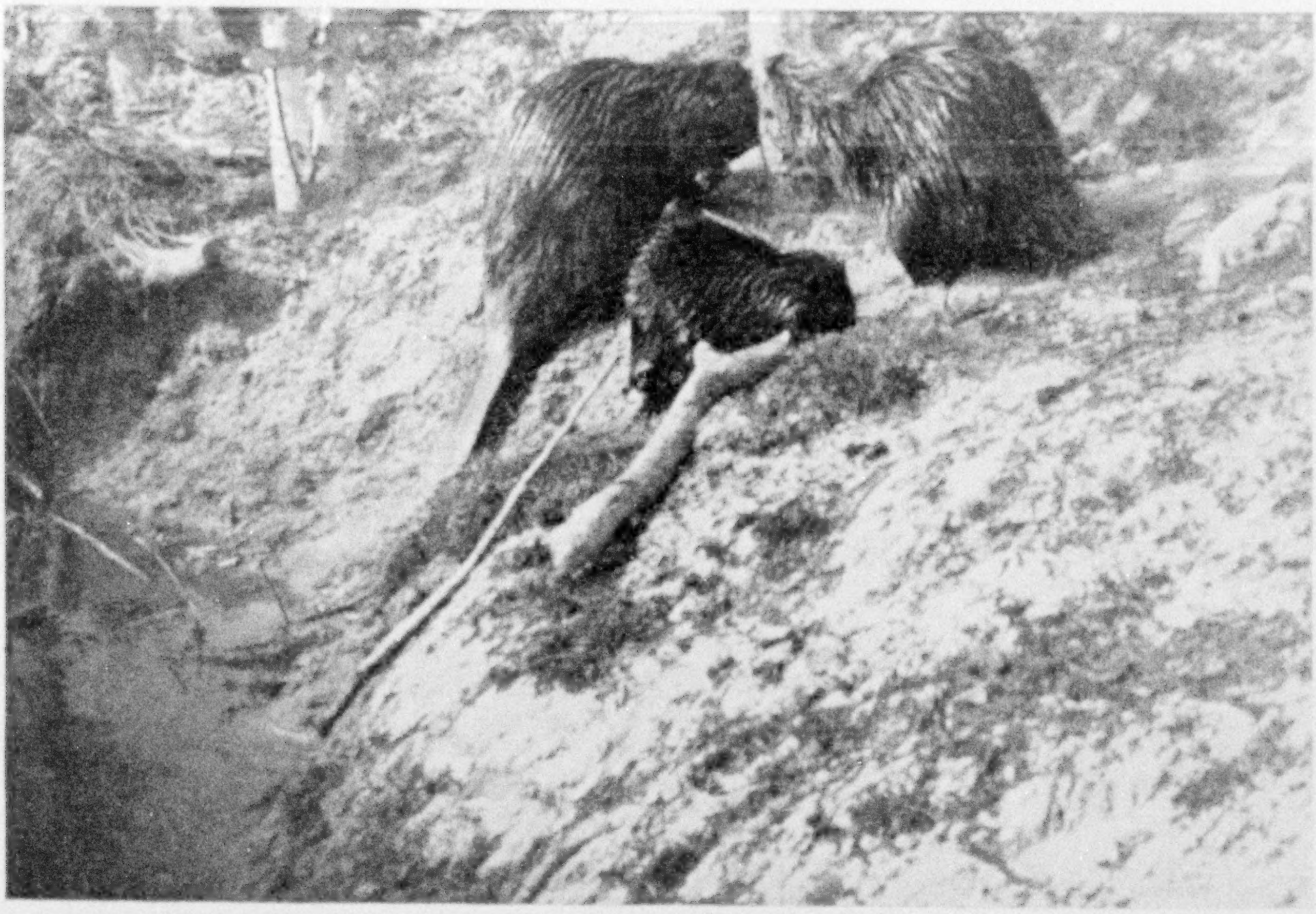
I was resigning myself to the same frustration in film-taking that I had met at other locations, when Mickey reappeared, swimming slowly closer to me. His approach brought him to the sloping face of the dam wall, where he found footing, raised himself upright, and appeared to study me intently as I cajoled him. By dusk he had given me an hour's audience, broken by intermittent diving.

The next afternoon Mickey repeated his performance, while I was ensconced in a position nearer the water plaza, where he had sported the evening before. For six consecutive afternoons the patriarch did his stunt, and each day I talked to him at closer range. On the seventh day I set up the camera within 50 feet of a gap, 10 feet long and 2 feet deep, that we had previously torn in the crown of the dam wall. The wall of the dam was, irregularly, about four feet thick.

Mickey stood for the camera and apparently welcomed my chatter for 18 successive afternoons, working for me an average of 90 minutes daily in good light. On the last day my approach had brought the lens to within six feet of the beaver at work on the breach. My companion frightened him intentionally as good light waned, and his dive at this distance spattered water on the lens, cutting out the picture with a spray which enhanced the film record.

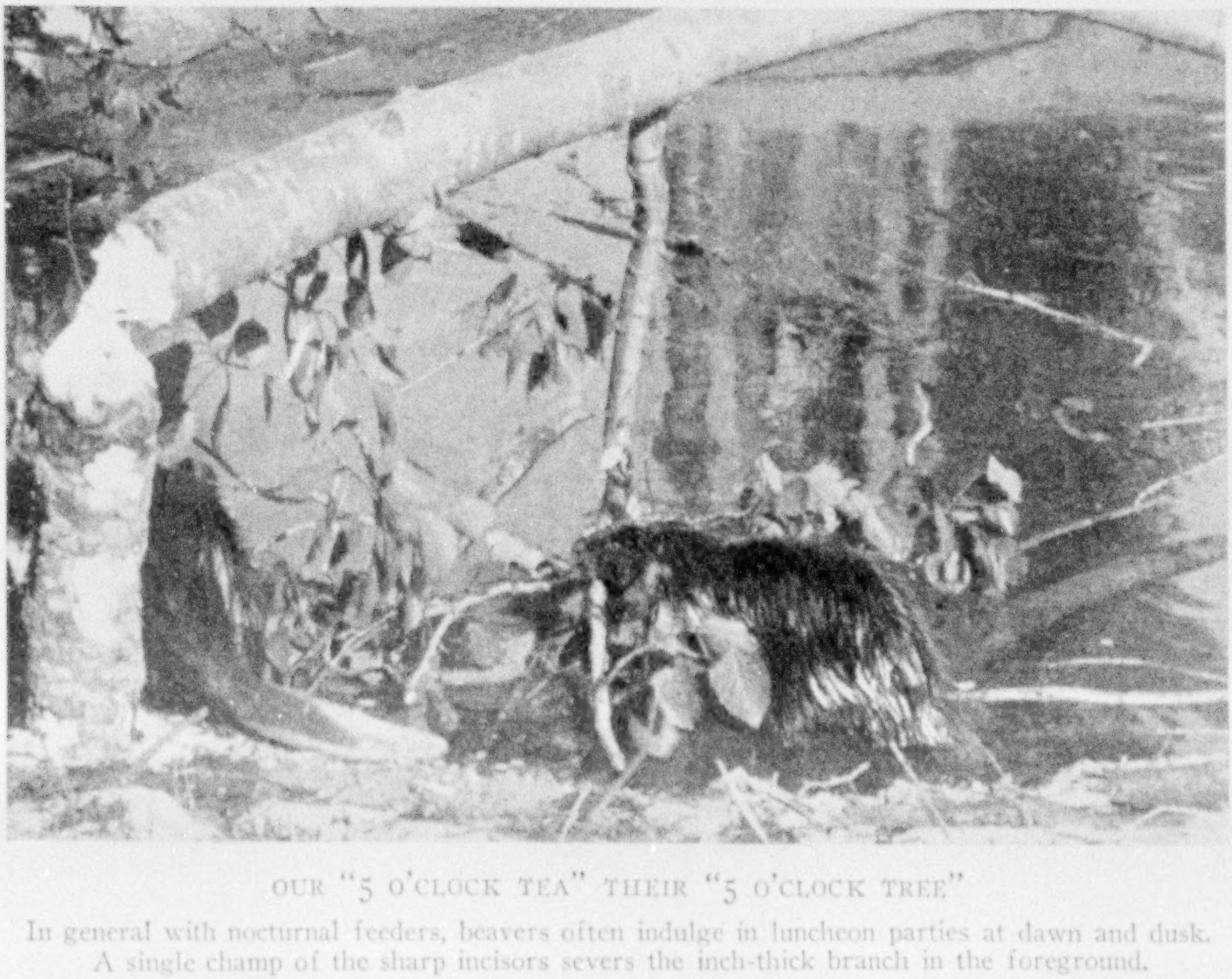
MICKEY REPAIRS THE DAM BREACH

Each morning, with a long steel hook, we would make the same sort of gap at the same place in the dam wall. By the



THE WHOLE DAM-BUILDING FAMILY

Seldom is the entire household observed collectively in good daylight. On this occasion ravenous hunger had made them bold, after the author's night patrol had prevented nocturnal feeding. Here is Mickey (right), his wife, "Silky," and their son, "Fuzzy," in the foreground, with little sister, "Zippy," near the birches at the left.



OUR "5 O'CLOCK TEA" THEIR "5 O'CLOCK TREE"

In general with nocturnal feeders, beavers often indulge in luncheon parties at dawn and dusk. A single champ of the sharp incisors severs the inch-thick branch in the foreground.

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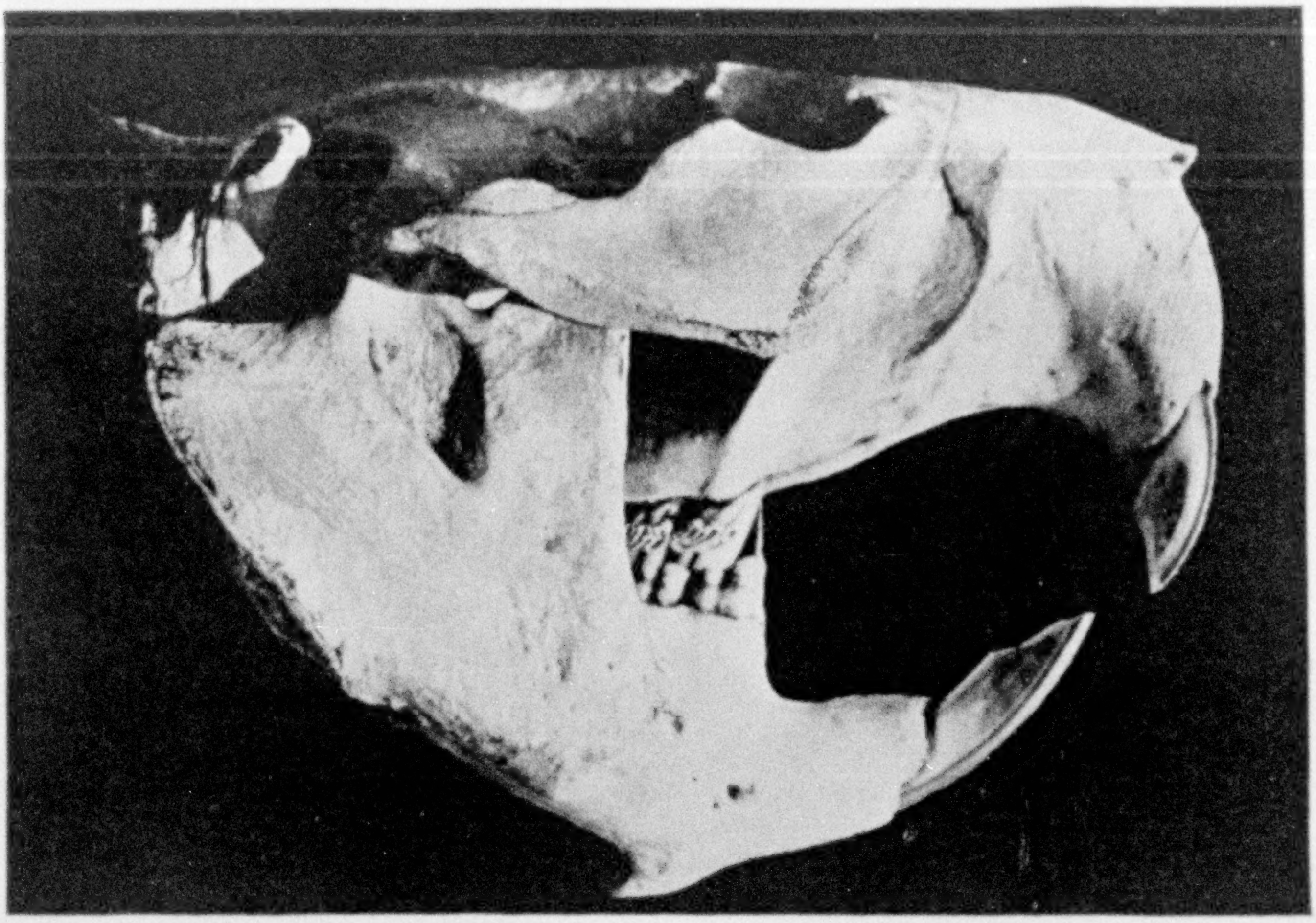


Photograph courtesy Bureau of Biological Survey

A BEAVER SKULL, SHOWING THE CHISEL-LIKE INCISORS USED IN CUTTING TREES

The large incisors are operated by powerful muscles attached to the massive bones of the skull, and the chisel edges are kept sharp by frequent scraping away of the soft inner dentine from the thin surface layer of hard enamel. Often when a beaver seems idle it can be heard sharpening its teeth by rubbing the edges together. If one curved incisor is injured in the jaw it may grow no more, but its complement sometimes extends and finally seals the jaw, causing death from starvation.

time for Mickey's regular appearance, the water of the pond would have dropped about 12 inches in level. Ninety minutes of strenuous work by Mickey would result in stoppage of the flow by a superficial upstream face (see pages 742 and 747). Next morning repair was complete and one could not recognize the place of embrasure except by its relation to other objects.

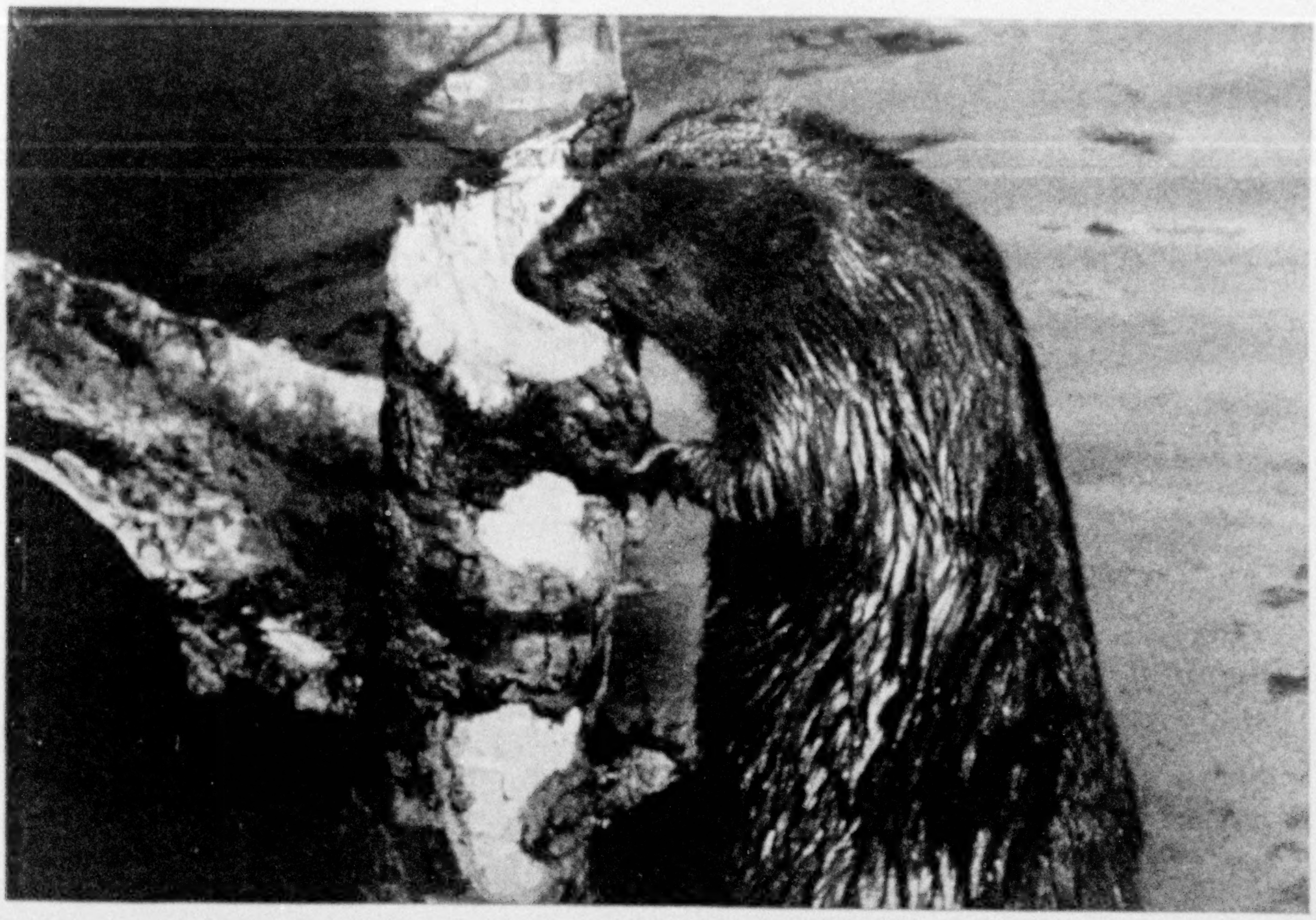
Repeatedly Mickey's wife appeared, coming near, as if she intended to help in the repair work. Two young were with her on each visit. Always her advent resulted in Mickey's slap of alarm and her disappearance with the children.

Mickey's initial conduct in the daily repair of the break, after a general inspection, which took him over the wall in a careful examination of the downstream base, was to fell several saplings. He towed them to the breach and allowed them to float down, the butts resting on the creek bottom below. The angle at which he placed them left about six feet of top with branches protruding above the wall.

These saplings were from 2 to 5 inches in diameter. Often he utilized inundated stock. His dive would indicate the tree he was going to cut in the water. Several times he cut stock of more than two inches without coming to the surface during the operation. His submerged time on a tree of this size was about 11 minutes. At intervals bubbles would arise, denoting an extra supply of air when he dived.

With his "studding" of saplings in place, nondescript bits of flotsam were assembled in a depression of the wall. On one occasion, not until he had brought in seven small stakes, which he drove down vertically at intervals in the breach, did he make use of this cache. To me this was obvious planning in his utilization of building material.

He collected willows of about an inch in width, and drove them into the sides of



MICKEY FELLS A 6-INCH TREE

He cuts above and then below; then he takes out the same sort of chip that falls from the woodman's ax. Perhaps the white abrasions below the cut are tests to determine whether or not the bark is edible.

the gap at variance with the lay of the studding saplings. Occasionally he would nip off a branch from the protruding studding tops, utilizing it in the work below. He varied his activity by diving, and we assumed from the discoloration of the water that his webbed hind feet were kicking up the bottom mud.

This mud, carried by the current into the interstices of his woodwork, plastered the construction. One pond that I afterward drained displayed a crescent ditch coinciding with the contour of the dam wall, like a castle moat.

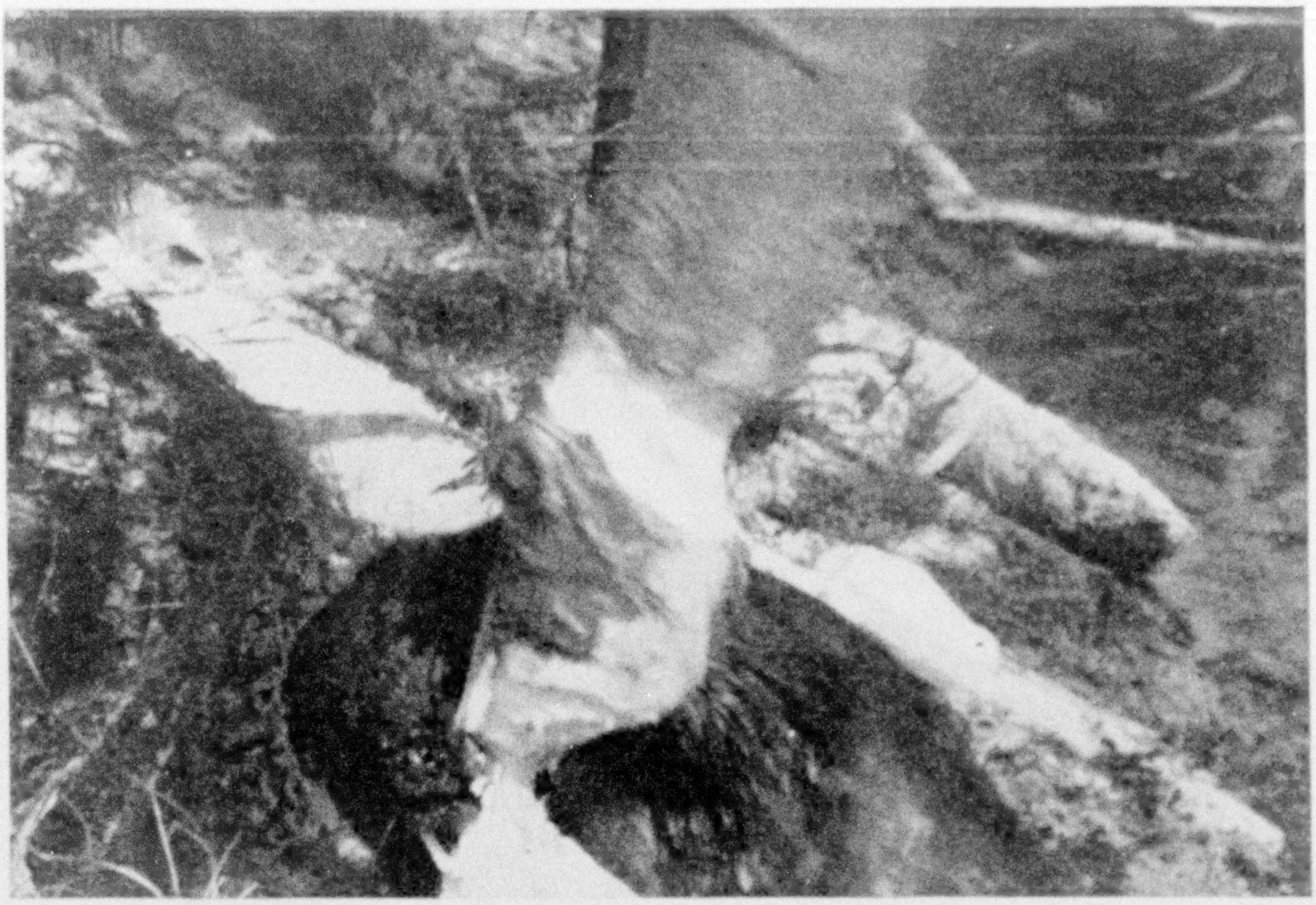
CHINKING TRICKLE HOLES WITH MUD

Mickey now contrived, with his reserve of pond litter, braced by the stakes he had driven and reënforced by sods taken from the pond edge, to stop the major flow. Each evening as we left he was busy chinking the trickle holes with mud and grasses. The wads of mud, like most small objects transported by him, were held between his little front paws and his chin.

Once in his operations Mickey selected one of an oblong of four 3-inch inundated trees, all about 20 feet in height above the surface. The ends of the figure were eight feet apart and the two trees on each end separated by two feet. Cutting submerged, he made an error of judgment, for the tree when falling carried the top of its companion toward the other two, entangling all the tops.

Coming up with the butt of his felled tree, Mickey made frantic efforts to release it. He would drive his great incisors in deeper and throw his body sidewise with surges that carried him 10 feet or more. This failed to free it. After he had surveyed the mess a while, he finally crawled up the trunk, fastened his chisel teeth in it, and catapulted to the right, whipping the tree into a bow. The force of his throw broke his tooth hold and he splashed some distance off. The tree sprung back, but did not untangle. Returning, he dived and cut the companion tree. This eased it somewhat, but it still resisted his tugging. He then dived by the two remaining trees.

Suddenly the more slender of the trees

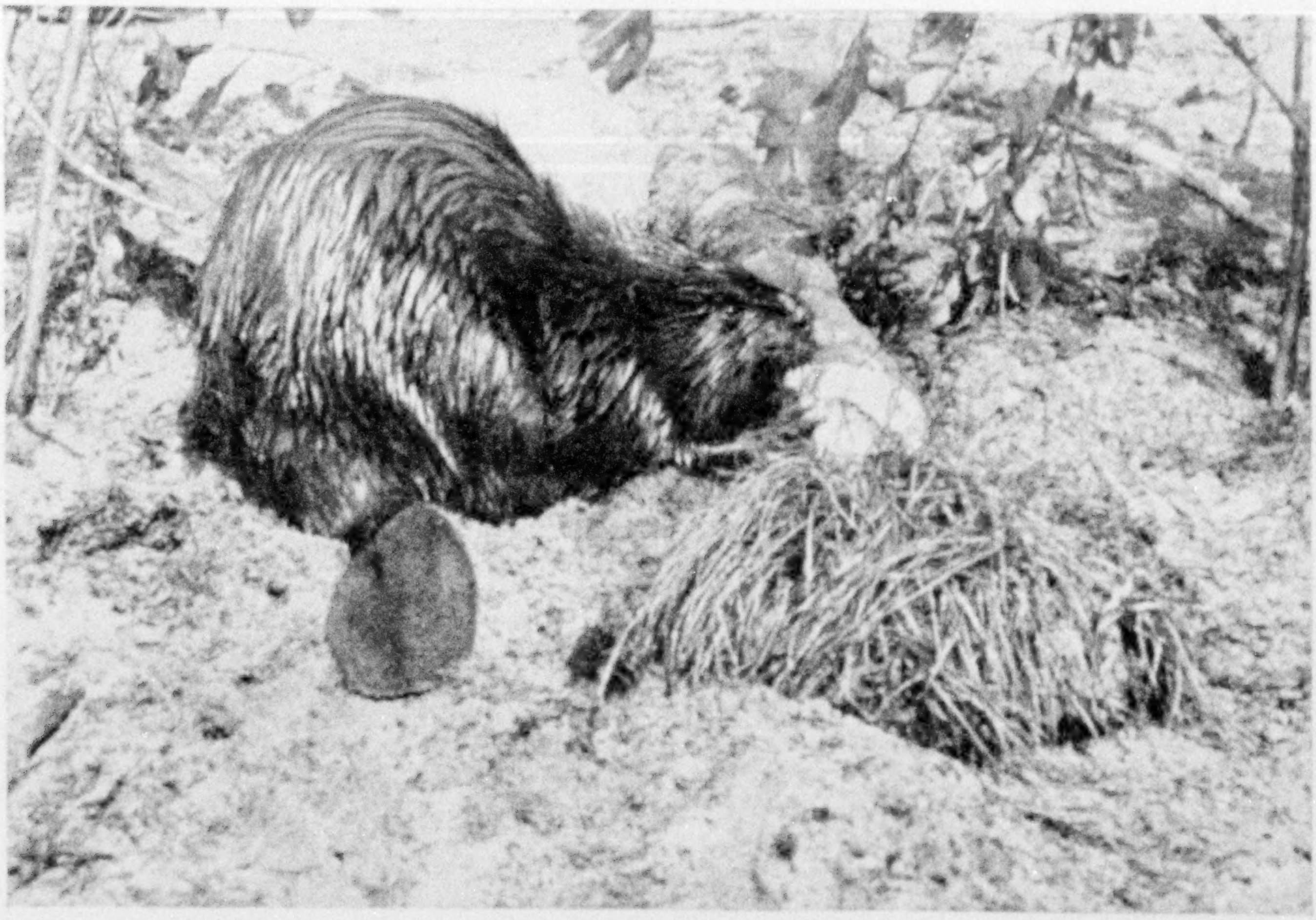


CAUGHT IN THE ACT OF FALLING

The teetering tree starts its descent as Mickey's sharp tools are severing the few fibers still connecting it with the stump. Note the preliminary kerf above the felling cut.

THE PREMIER STUMP FOR SIZE

The largest old cutting located had a diameter of 38 inches over all. The stump carried three trunks, which were felled in a triangle—north, west, and south.

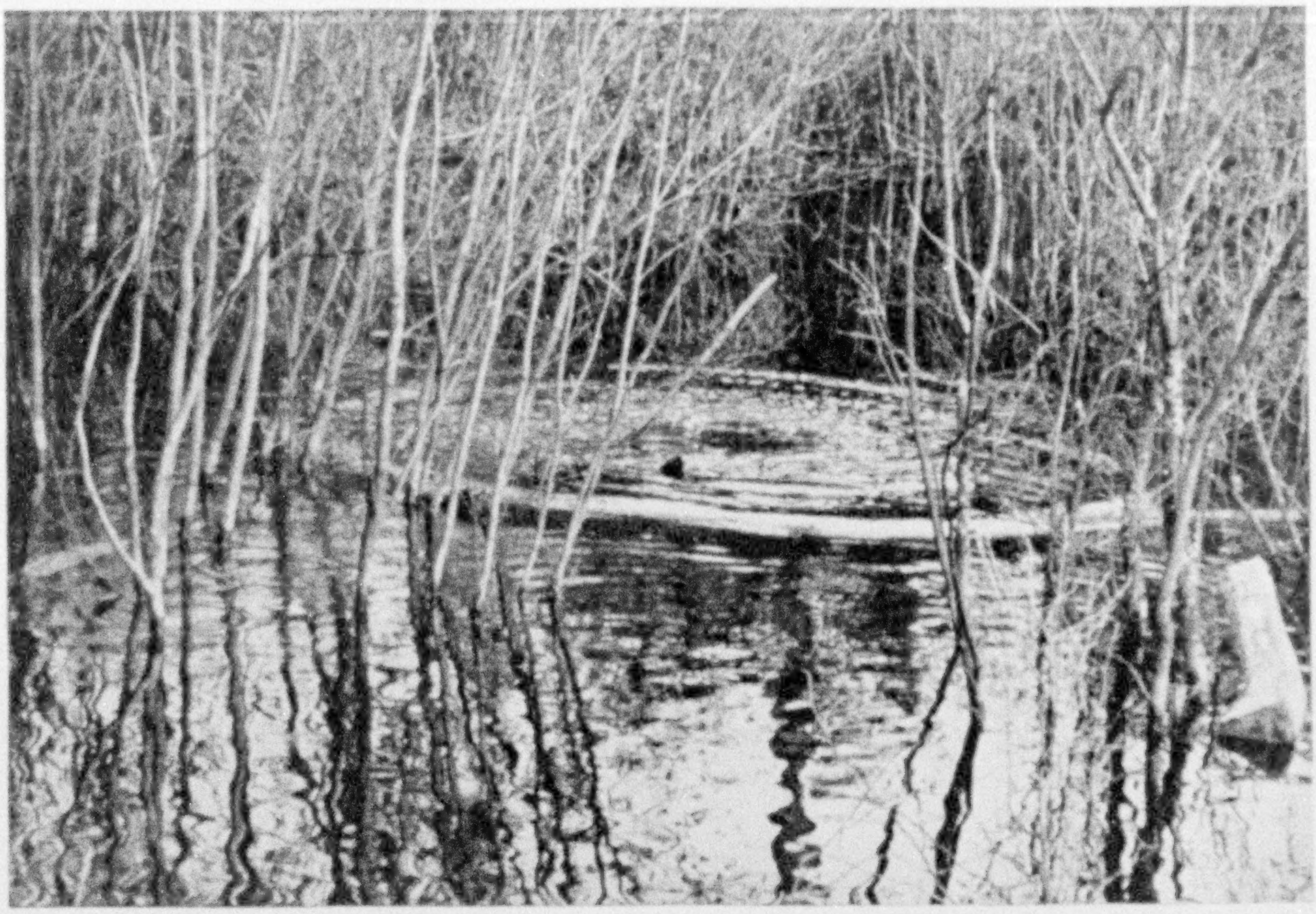


MICKEY HAULS A LOG DOWN HILL TO HIS CANAL

The author's night patrol of the pond shores enforced a fast on the beavers. The next morning, after several timid essays, hungry Mickey brought down a log from the plateau above.

TOWING A LOG FROM THE BASE OF THE PLATEAU TO THE POND

Another enforced fast, through fear of an all-night patrol, caused Mickey to tow this log a distance of 30 yards.



MICKEY'S PHENOMENAL FLURRY STUNT

The dark object in the left foreground of the inner foam circle is Mickey's tail. The author descried him one morning in a remarkable flurry; the body, wholly or in part submerged, was being rapidly driven in an orbit by the action of the tail, which had something of the whirl of a boat propeller instead of a sculling motion.

whipped in a half circle, like a trout rod cast by a novice, and the objective tree fell clear.

Mickey varied his usual procedure on the fifteenth afternoon. In the morning we noticed, floating near the dam, several large trees cut the night before. Mickey came at 4:29. His first act was to cut more large pond trees. When there were nine in all, instead of his usual preliminary work he towed the big trees in, laying them parallel with the dam wall, end to end, as near as the decaying, scrawny tops would allow, one trunk flow-pressed at the gap. Our film records this performance, with Mickey rearing up, and later peering at us as if to gauge our reaction to this new stunt.

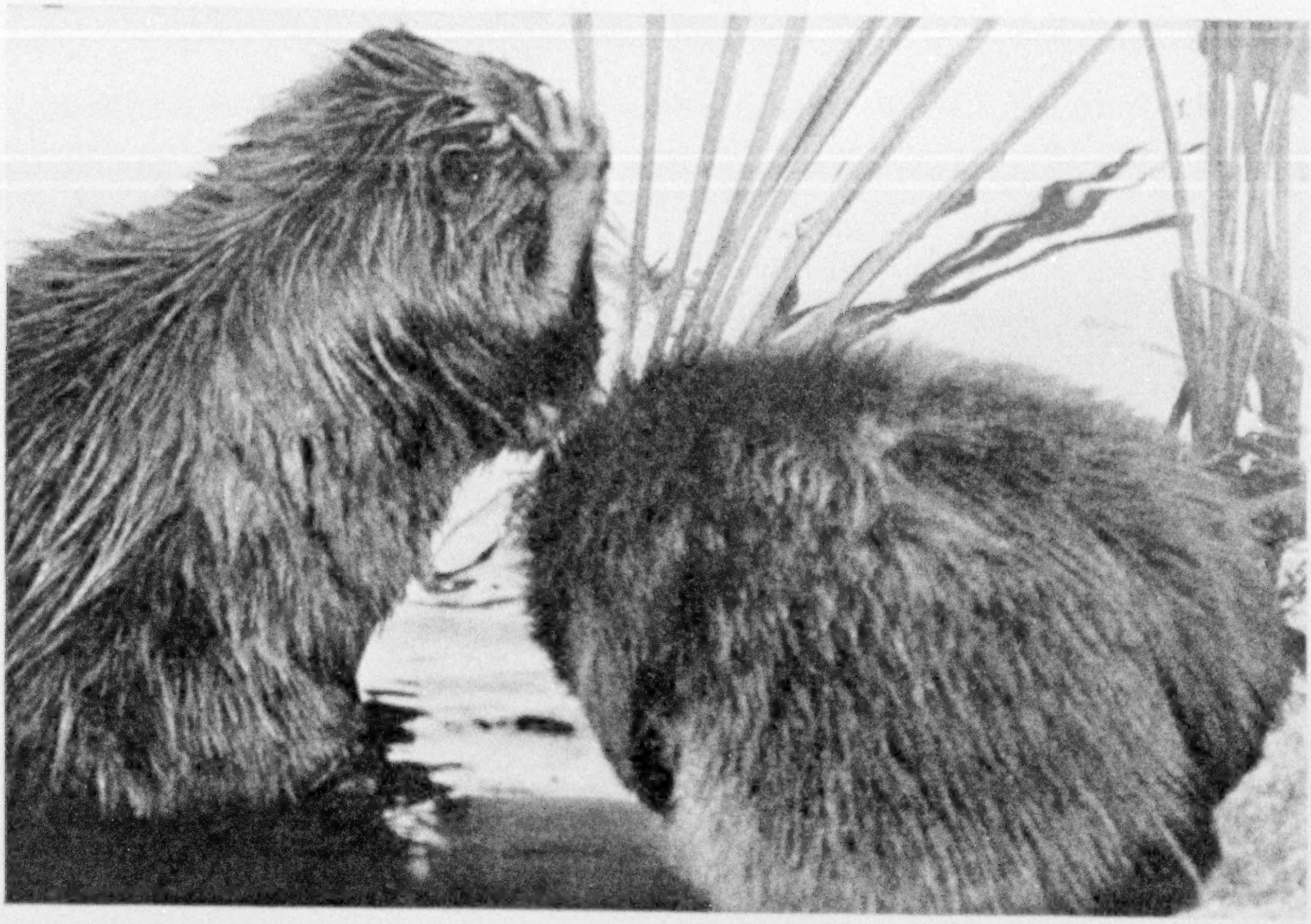
One of the big trees was 40 feet in length, by tape, and 10 inches in diameter at the butt. It was decayed by long submerging, so his underwater felling required the cutting of only four inches of live fiber.

Green timber had been cleared from Mickey's lower flat, so he dug a canal to the base of a poplar-covered plateau five rods distant. Such canals may be designed for self-protection more than to ease the load, for a beaver can readily haul his logs overland. There are in Michigan the wolf, coyote, lynx, wildcat, and bear, any one of which would find the beaver on land an easy prey.

If Mickey cut a 6-inch tree on the plateau, the trunk would be cut into logs two feet long; if the tree were smaller the logs might be four feet.

THE WHOLE BEAVER FAMILY LAYS IN THE WINTER'S FOOD SUPPLY

Mickey's canal was 30 yards in length and reached its objective by the most direct route available. It averaged about three feet in width, with a depth of more than two feet. In order to obtain a picture of his log towing, three of us patrolled the pond all night, enforcing a fast. Next morning, after several timid essays, he mustered hungry courage and brought several logs through within 12 feet of our blind. Later we employed similar methods



ALL BEAVERS ARE BEAU BRUMMELS

When they are not working or playing, beavers are eating, sleeping, or primping. Both sexes are equipped with oil glands on each side of the lower body. Their hind feet carry queer toenail combs. With pressure of the paws the glands exude their hair-oil. They comb and oil and preen and primp in happy perseverance. This is a photograph of yearling beavers in captivity; all the other photographs with this article are of animals in their native state.

in obtaining a picture of him as he hauled a log downhill.

On all the locations we visited, beavers began to lay in the winter supply of food in late September. The whole family joined in the labor. Most of the logs were held submerged under trees previously anchored by insertion of the limb ends in the soft bottom. Some of the lone logs, apparently lying free on the bottom of the pond, got a deft dash of mud at end or side from a flirt of tail or paw before the beaver left them.

In determining the trees to be taken, Mickey, like other beavers observed, appeared to select units that in his judgment would fall clear. As he surveyed things his actions conveyed his intent. Upright, braced by his broad tail, he seemed to note the correlation of his objective tree with its surroundings. Not satisfied with a single viewpoint, he would move around, peering upward in apparent study of conditions at another angle. On two occasions, after much investigation, which seemed to leave him in doubt, he forsook trees he had been examining and cut others.

HOW THE BEAVER FELLS A TREE

The beaver does not "gnaw" a tree down. Assuming that he has decided upon a tree, he puts in his felling kerf. This is made from 15 to 22 inches from the ground. During the operation he rests on his hind feet and tail.

His first slash is above, the next, on a 6-inch tree, about five inches below. Then he takes out the same sort of chip which falls from the woodsman's ax. Penetrating past the heart, the cleft shows a decided upward slant. From the opposite side he *hews* through the remaining fiber and the tree falls (see page 751).

During the 18 days of Mickey's repair work before my camera he never failed to show up within three minutes of the same time.

There was the morning breach of the dam, with attendant lowering of the pond level. At four in the afternoon the pond would be silent, except for the plashing

XUM

A WHITE SPLASH FOLLOWS THE BEAVER'S ALARM

The "danger" signal is a resounding slap of the tail, always preceding a hurried dive. The slap and splash are often made in sport, however, and Mickey's last salute to the author was the "good-bye" slap which here disturbs the water.

where we had tapped the wall and the rustle of grackle wings, as they flitted about in quest of food which the hatcheries of dead and dying timber afforded. Within a few minutes, out of the comparative silence would come the boom of a big bass bullfrog. Soon the tenor, alto, soprano. Then a general chorus, with swelling volume to the finale, which came with startling abruptness. The chorus would last for 15 minutes.

Another period of silence, then riffles would break on the placid water, spreading in shimmering wavelets to each shore. We knew this to be the muskrat's calling card. Instead of sending it up he would take it down as he dived to visit with Mickey and the family.

With one exception, at all the locations I had investigated, one or more muskrats came calling on the beavers in the late afternoon. Every evening they came on Mickey's pond, generally a pair, sometimes three. They would stay below for about ten minutes, then emerge with him. Mickey would sport with them for a few moments, then the muskrats would head upstream and he would swim over to note the damage at his dam. On the last day of repair, seven people, previously informed of Mickey's punctuality, witnessed his arrival on time.

Space circumscribes this story of Mickey and his sedulous, sagacious activities, but if there be one who doubts the wonders in the beaver world, let him go in midsummer to the vicinity of the Crisp Point U. S. Coast Guard station, on the Lake Superior shore of northern Michigan, and view how the conversion of a river's flow into a 3-mile line of seepage "basin" feeders created homes for scores of beavers where conditions had afforded homes for few.

Note in the construction the use of waterproof clays, brought a considerable distance from the only deposits of the kind in the vicinity. Or, locate a house in midwinter, with the temperature around 20° below zero, and note the vapors escaping by roof vents, which indicate that when the animal coated his house with congealing mud before ice sealed the pond, he *planned* a system of ventilation.

FALCON, THE PACIFIC'S NEWEST ISLAND

By J. Edward Hoffmeister

Professor of Geology, University of Rochester, N. Y., and

Harry S. Ladd

Assistant Professor of Geology, University of Virginia

LANDS as well as people have their ups and downs. It is doubtful, however, if any land has been built up and cut down so often within the recollection of man as has Falcon Island. Located in the southwestern part of the Tonga, or Friendly, group of islands in the South Pacific, it has appeared, then disappeared from sight at least twice. In October, 1927, another eruption occurred which again raised it high above the level of the sea and brought it to the attention of men the world over.

Since that time newspapers of many countries have published articles concerning its reappearance. Lavas have been reported flowing down its sides and great clouds of ash and steam rising several thousand feet above it. These reports came at long intervals during the winter of 1927-28 and were made by H. M. S. *Laburnum*, the T. S. S. *Tofua*, and the S. S. *Tutanikai*, which on one or two occasions passed close enough to obtain good views.

At this time the writers were making plans to continue geological work begun in 1926 in Tonga and Fiji, under the sponsorship of the Bishop Museum of Honolulu. It was decided that, if it were physically possible, a trip should be made to Falcon Island and a landing effected.

FALCON LOCATED ON VOLCANIC LINE

The more exact location of Falcon Island is about latitude 20° 19′ S. and longitude 175° 25′ W. If one could examine a geological map of this general region, he would find that all the volcanic islands lie in a straight line which runs in a north-northeast and south-southwest direction. Beginning with Mount Ruapehu, in North Island, New Zealand, through the Kermadec Islands, continuing through Ata (Pylstaart), Honga Tonga, Falcon, Tofua, Kao, Metis, Late, and Fanualai (Amargura), the volcanic islands of Tonga, and terminating in Samoa, this line includes one of the greatest chains of active and dormant volcanoes in the world (see map, page 760).

It represents a line of weakness in the earth's crust and along it from time to time molten material is ejected. The world is made aware of these ejections only when the material reaches the surface and forms islands or shoals.

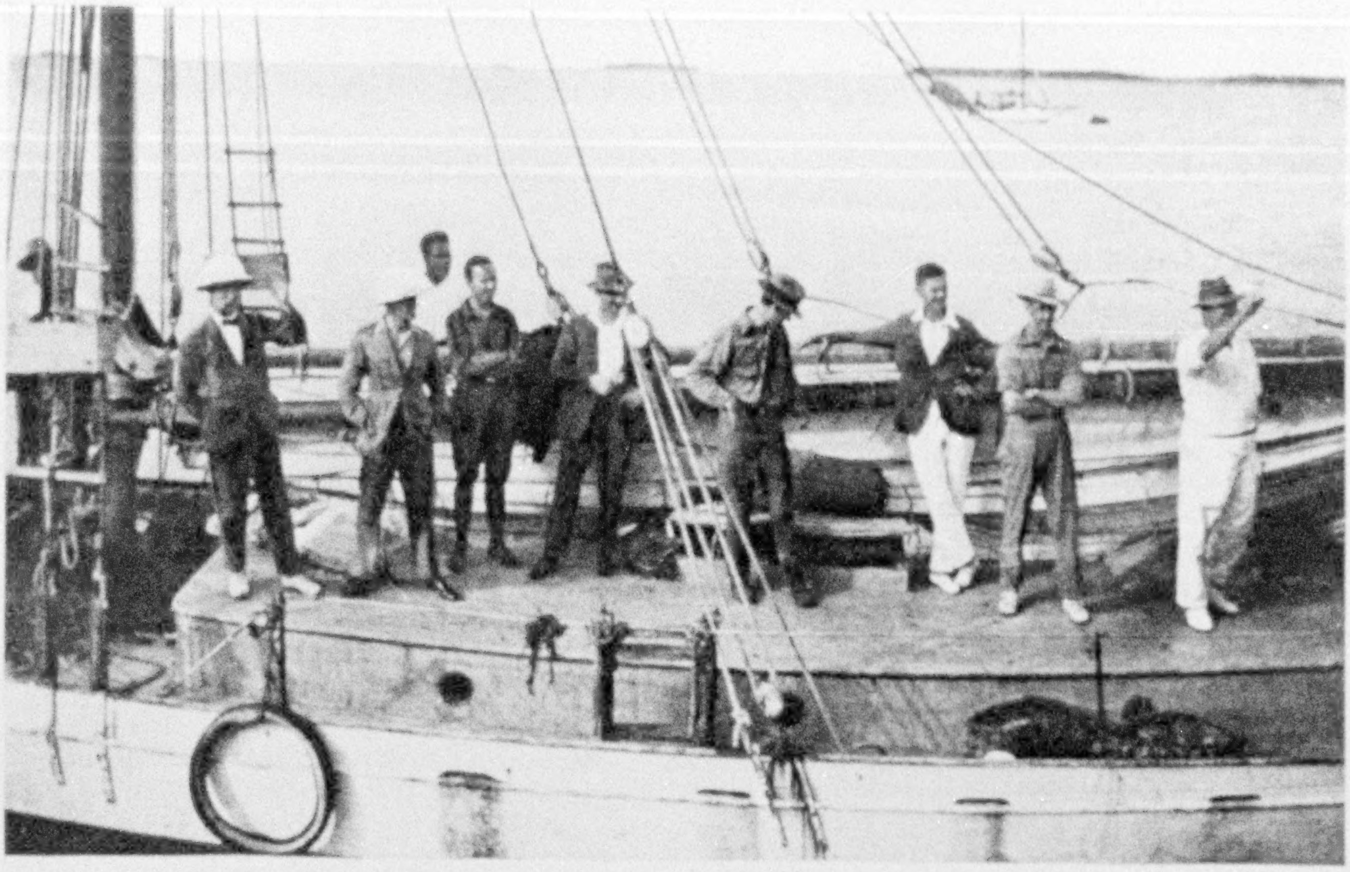
It is very probable, however, that in many places along the line there are submarine volcanoes of whose existence no knowledge has ever been obtained. If one were to predict where the next new island in this part of the world would appear, it would be fairly safe to say somewhere along this line. Practically all the other islands of the region are of nonvolcanic rock, chiefly limestone.

A HIDE-AND-SEEK ISLAND

The island received its name when H. M. S. *Falcon* visited the spot in 1865 and reported a shoal. Twelve years later H. M. S. *Sappho* reported smoke to be issuing from the sea at the same position. In 1885 a submarine volcano burst suddenly into activity and built up a mound which, after a year of intermittent eruption, reached a height of at least 290 feet.

In 1889, H. M. S. *Egeria* visited the island and Mr. J. J. Lister, an English geologist on board, made some careful observations. He found that during the four years since its formation the action of the sea had removed a large portion of the island, and that only about a third of the original mound remained. He calculated the maximum height of the island at that time to be 153 feet.

Further observations were made by the British Admiralty in August, 1895. Falcon Island extended 800 yards in a northeast-southwest direction and 700 yards in a northwest-southeast direction. It was nearly circular in form and only 40 feet above water.



Photograph by R. Taylor

MOST OF NUKUALOFA'S CAUCASIAN POPULATION SETS SAIL

When the 42-foot cutter *Fetuuaho* left for the new volcanic island most of the Europeans of the capital of the Tonga group as well as the American authors (third and fifth from the left, front row) were aboard.

In July, 1898, it was reported to have disappeared and its site was occupied by a shoal 100 yards in extent on which the sea broke heavily. Thus it took the sea, the rain, and the wind only thirteen years to cause an island with a maximum diameter of about two miles and a height of 290 feet to disappear completely.

There is a popular misconception that islands of this sort disappear by actual sinking. Their disappearance, however, is due solely to the leveling action of the agents of erosion. Two years later, the shoal to which Falcon Island had been reduced was showing about 10 feet above the water at the northern end—probably the result of wave action which concentrated the material to leeward. In this condition it was subsequently piled above sea level by the southeast trade winds.

In 1913, H. M. S. *Cormoran* reported that the island had disappeared once more. Finally the most violent eruption on record occurred in October, 1927. From that time until the present, minor eruptions, separated by periods of quiescence, have added slightly to the size of the mound.

We arrived in Nukualofa, the quaint, clean-looking little capital of the Tonga Islands, in the early part of May, 1928. The kingdom of Tonga is a British protectorate, but is unique among the island groups in that it maintains its own government. The present ruler is Queen Salote Tubou, under whom are a cabinet and parliament. There are approximately 27,000 people scattered over about 300 islands.

AN ISLAND KINGDOM IN MID-PACIFIC

These are among the most beautiful islands of the South Seas—low-lying, covered with gently waving, graceful coconut palms, edged with coral reefs or clean, sandy beaches, surrounded by the bluest of water, and peopled by happy, good-looking, good-natured Polynesians.

In making plans for the Falcon expedition, we approached the Hon. William Tugi, Premier of Tonga, and Prince Consort of Queen Salote. He is an able, kindly man, respected and loved by his people. He immediately joined in the plans with enthusiasm and promised aid. If a landing could be made on Falcon Island, it was his intention to raise the Tongan flag and claim it for his country.

Photograph by R. Taylor

THE "FETUUAHO" GETS UNDER WAY

A light breeze that carried the cutter slowly across the harbor of Nukualofa strengthened to a stiff wind when the open sea was reached.

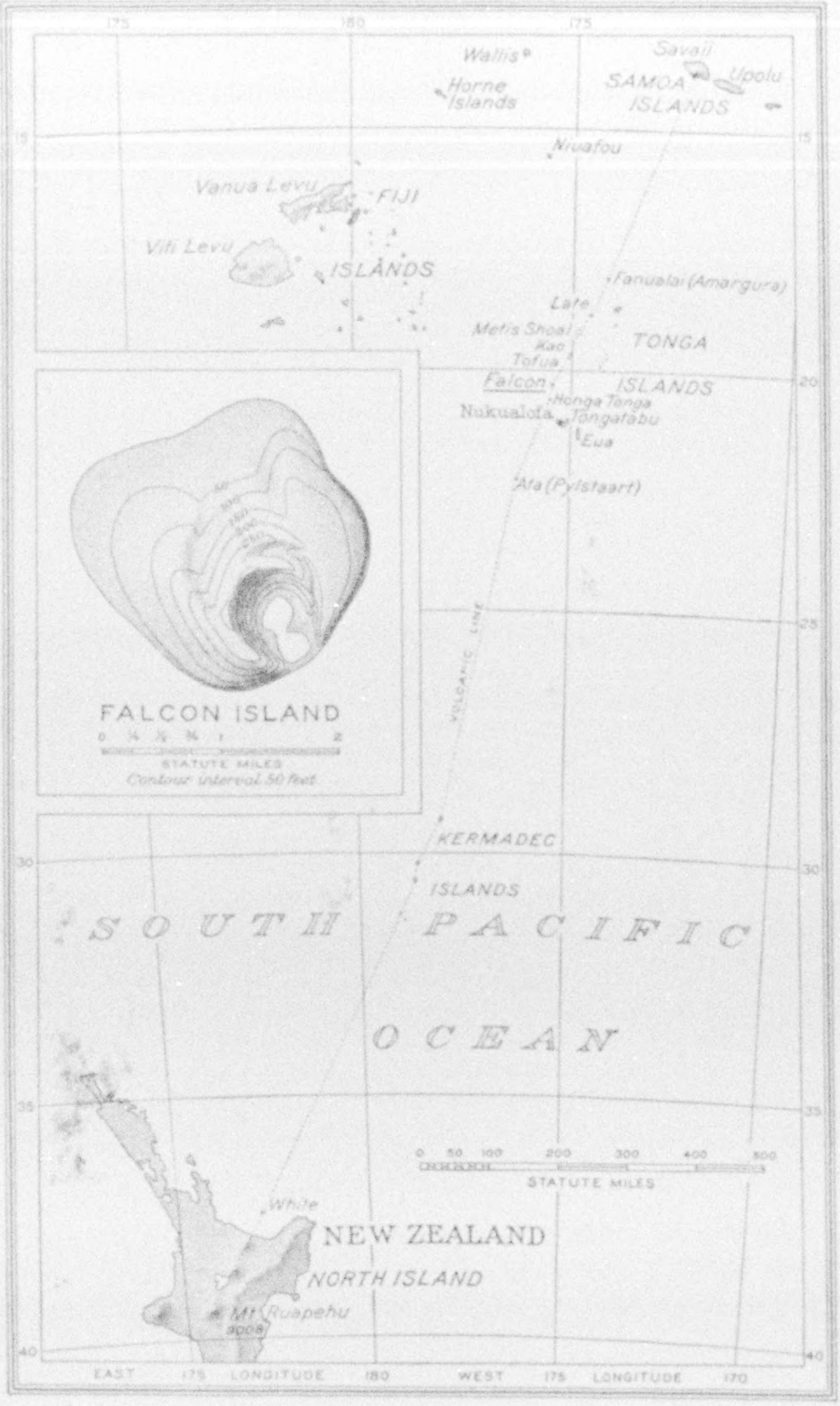
Reports of the lava flows had raised the hope that the island was made of harder material than in its former condition, and that it was now here to stay.

The next two weeks were devoted to some geological work on the island of Eua, about 25 miles from Nukualofa and one of the highest of the Tongas. On two occasions, from the top of this island at an elevation of 900 feet, Falcon, 60 miles away, could be seen in violent eruption. The cone could barely be made out in the distance, but the cloud of ashes and steam rose to a height of several thousand feet. At that time the chances of making a landing appeared remote.

Returning to Nukualofa, we discussed with the Premier the various cutters available for the trip. Havea, a young native chief, offered his boat. Later in the day, however, Mr. Page, director of the Wesleyan Mission of Tonga, kindly placed at our disposal the mission cutter, the *Fetuuaho*. This was a bigger boat and answered the purpose so much better that we immediately accepted it.

EUROPEANS EAGERLY VOLUNTEER FOR TRIP

The small European population of Nukualofa was much interested in the adventure and it was a simple task to recruit the rest of the party. There were nine in all, headed by the Premier. In addition, there were 10 natives, three of whom were attendants of Premier Tugi, the others the captain and crew of the boat.


Wallis
Horne Islands
Savaii
Upolu
SAMOA ISLANDS
Niuafou
Vanua Levu
FIJI
Viti Levu
ISLANDS
Fanualai (Amargura)
Late
Metis Shoal
Kao
Tofua
TONGA
Falcon
ISLANDS
Honga Tonga
Nukualofa
Tongatabu
Eua
Ata (Pylstaart)
VOLCANIC LINE
FALCON ISLAND
STATUTE MILES
Contour interval 50 feet
KERMADEC
ISLANDS
SOUTH PACIFIC OCEAN
STATUTE MILES
White
NEW ZEALAND
NORTH ISLAND
Mt Ruapehu
9008
EAST 175 LONGITUDE 180 WEST 175 LONGITUDE 170

From a sketch map by J. Edward Hoffmeister

FALCON LIES ON A LINE WITH MANY VOLCANIC ISLANDS

Stretching from New Zealand to the Samoan group is a series of active and dormant volcanoes, indicating a line of weakness in the earth's crust (see text, page 757).

The native name for Falcon Island is Fonua Foo (New Place). It lies about 50 miles to the northwest of Nukualofa. We planned to leave Sunday afternoon, arrive some time Monday morning, land at once, if possible, make all necessary observations, and return to Nukualofa as soon as the wind would permit. Traveling by cutter is always uncertain, as either a storm or a calm may cause a delay of a week or more.

The *Fetuuaho,* which means Morning Star, was inspected Sunday morning. She was a well-built boat, 42 feet in length, 12-foot beam, decked over, and provided with 11 bunks. She was a comfortable cutter, as cutters go. Captain Fotu was found to be an intelligent, good-natured native with the reputation of being the best skipper in the islands.

At 3 o'clock lines were cast off and the adventure begun. Would the volcano permit a close enough approach, so that a good view might be obtained? Or, better still, would it be possible to make a landing and examine the crater and mounds in detail? These topics occupied the thoughts and conversation of the party until long after dark, when all turned in to get a few hours' sleep. There was a stiff breeze blowing and the cutter made good time.

AWAKENED AT MIDNIGHT BY SULPHUR FUMES

It is a curious sensation to be awakened at midnight by the strong odor of hydrogen sulphide. As we peered into the darkness, the low, conical outline of Falcon was barely discernible. There was no red glow above it and no material was being ejected, as far as could be determined. It seemed to be in a quiescent mood. So far, so good.

The whole question now was, Would the sea permit a landing? The captain hove to under reefed sails until daybreak. As the light appeared, the details of the island gradually became clear.

The crater was near sea level on the southeast side, separated from the ocean on this side by a rim only a few feet high. From it thin clouds of steam and sulphur fumes rose and were blown gently over the high mounds to the north. Even at a distance of half a mile it was clear that the island was made chiefly of unconsolidated volcanic ash. Already the sea had cut steep cliffs along the windward side and rain water had roughened the surface by a series of V-shaped gullies. Once more Falcon Island was destined to be washed away.

SURGE AND BREAKERS MAKE LANDING EXCITING

Newborn islands like Falcon have a fairly regular coastline and lack protecting reefs. Hence landing proved somewhat difficult. Heavy surges of the open sea flung themselves upon Falcon's shores with great violence. Much of the coast, especially to windward, was bordered by vertical cliffs, often more than 100 feet in height. These were undercut by the waves and from time to time huge sections of the soft, ashy beds slipped bodily into the sea. The lee shore (northwest) was not cliffed, but even here the breakers were heavy.

After sailing around the island the most likely spot was selected, sails were hauled down, and those going ashore climbed aboard the dinghy. We rowed to the edge of the breakers and there hesitated, for the prospect was not inviting. The shore was composed of coarse, black scoria (volcanic cinders) and pumice banked at an angle of 70 degrees. The highest waves barely reached the top of this steeply dipping bank. By riding a heavy wave it might have been possible to beach the dinghy, but she could never have been launched again successfully. There was nothing to do but swim through the breakers.

CAMERA FALLS INTO THE SEA

This was simple enough, but landing camera and instruments was another matter. No one had foreseen these difficulties and no waterproof container was to be had.

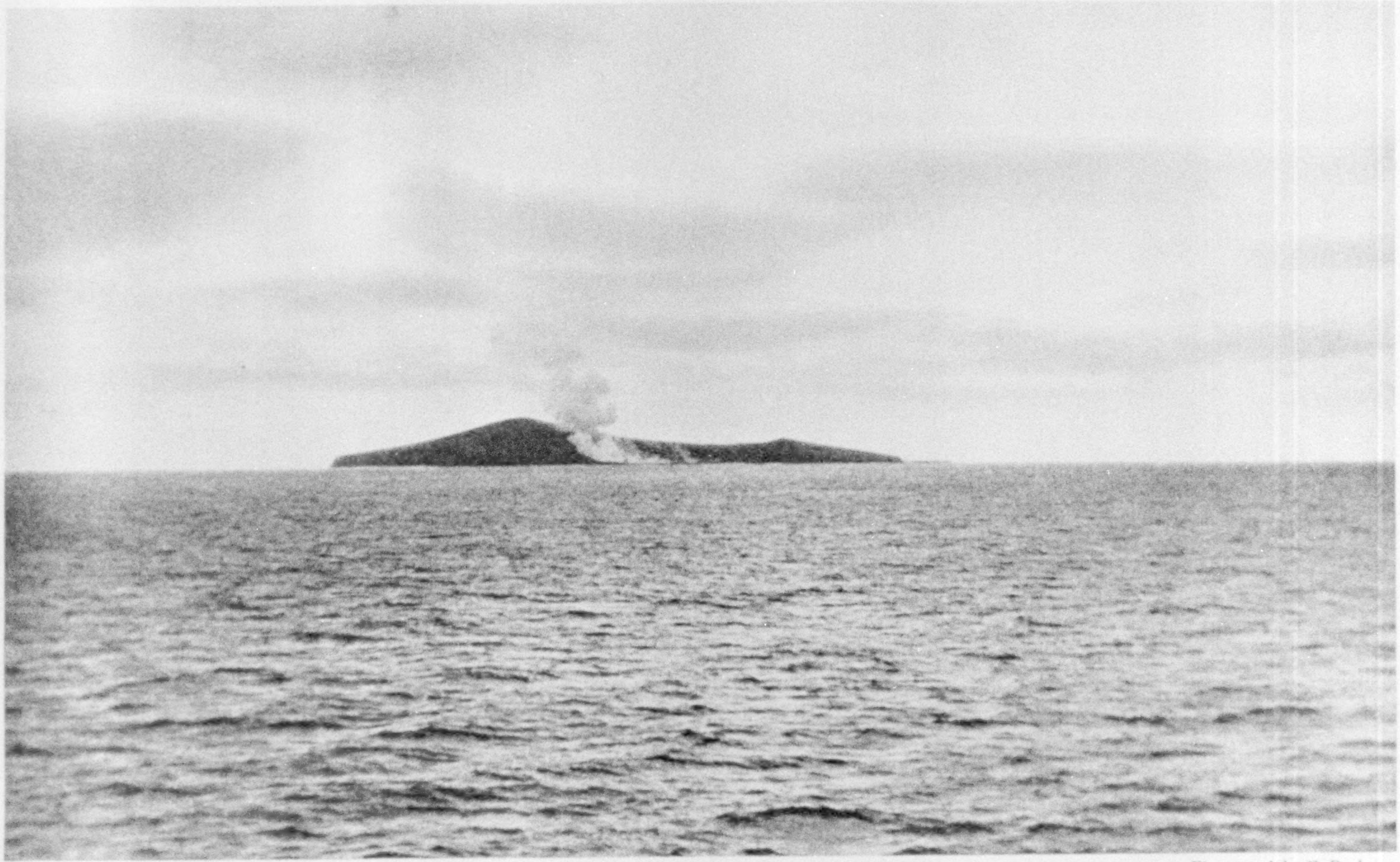
The strongest swimmer among the Tongan lads tried to swim ashore holding a haversack high above his head. This attempt was unsuccessful and he was fortunate in returning without wetting the sack badly. The Premier swam ashore carrying the aneroid barometer and other small gear tied on his head in a cloth. The rest of the party who could swim followed, sinking knee-deep into loose scoria on reaching the shore.

The native boatman was instructed to row up as close as possible and heave the camera sack to another boy standing waist-deep in the swirling surf. The boy in the dinghy made a noble effort, but the catch was bad and down went camera and notebook, out of sight in the scoria-filled water.

By good luck they were rescued as the wave receded, but salt water poured from the camera in streams. It was dried carefully with the cloth in which the aneroid had been wrapped, then reloaded. In

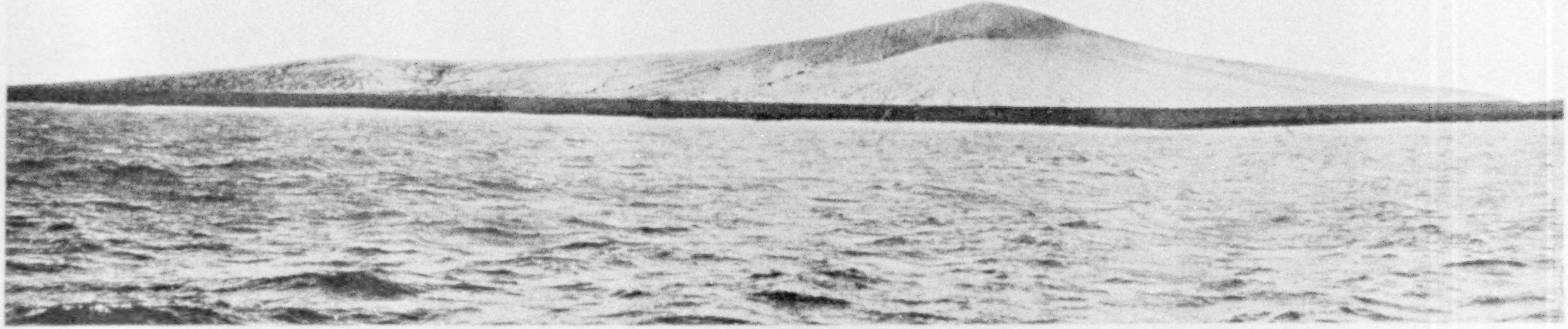
Photograph by J. H. D. Spencer

RAISING THE TONGA FLAG OVER FALCON ISLAND (SEE TEXT, PAGE 764)



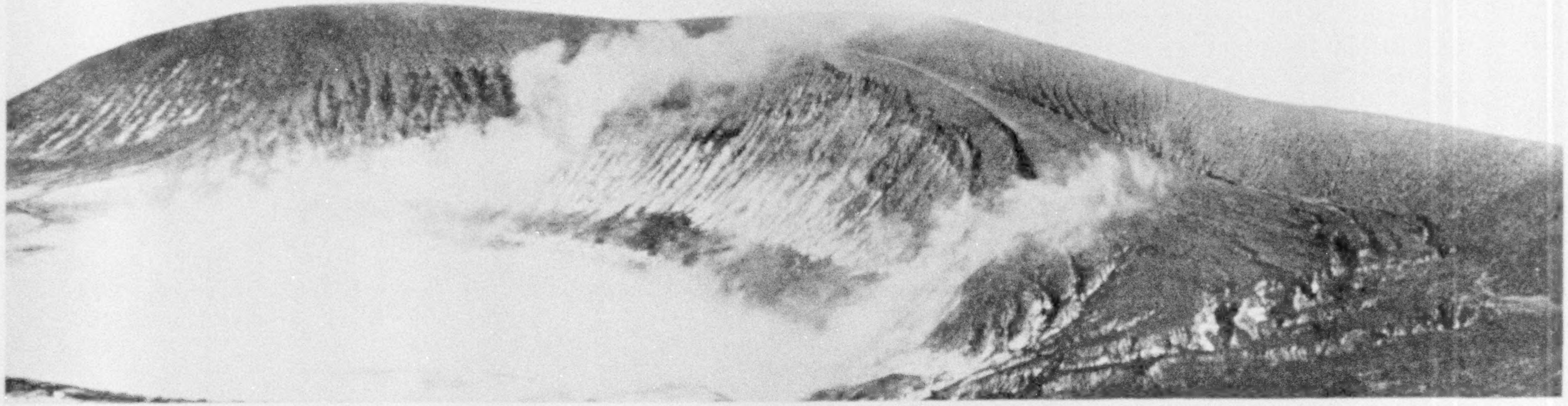
Photograph by E. Poole

A DISTANT VIEW FROM THE WINDWARD SIDE OF STEAMING FALCON ISLAND



A BIG MOUND TO APPEAR OVER NIGHT

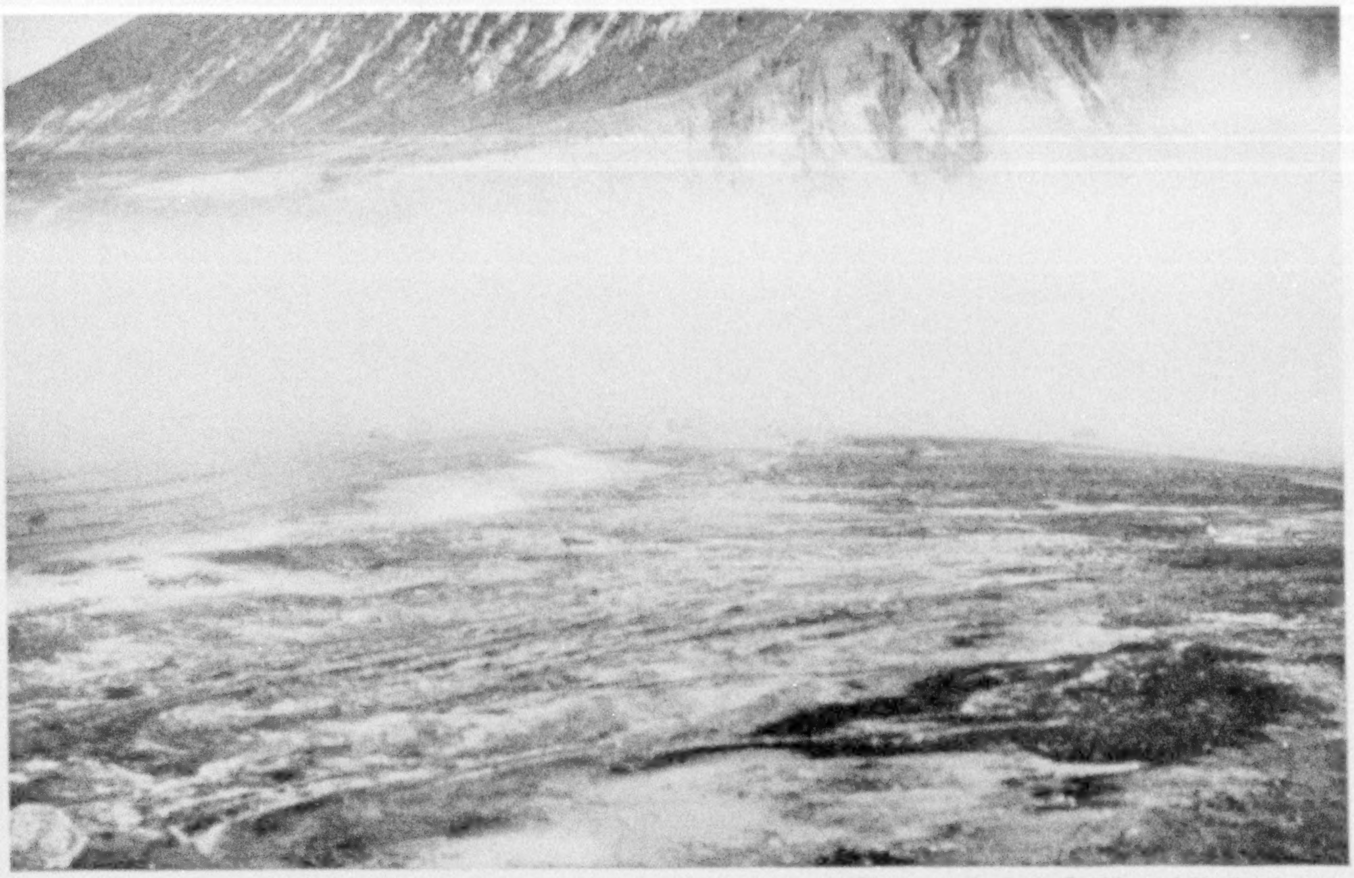
Falcon Island is roughly circular, with a maximum diameter of about two miles and a height of 365 feet.



Photographs from J. Edward Hoffmeister

THE CRATER OF FALCON ISLAND

A boiling greenish-yellow lake covers the bottom of the crater. The white streaks along the sides are concentrations of sulphurous deposits. This view is from a high point on the eastern wall. The vapors are drifting over the flag station (see illustration, page 761, and text, page 764).



Photograph from J. Edward Hoffmeister

THE FLOOR OF THE CRATER

The lake is surrounded by ash and sulphur flats. The surface of the water at this point is hidden by clouds of steam.

the meantime another camera had been brought ashore without mishap.

The landing place was near the center of the north coast, a broad, flattish area composed mostly of scoria, reworked by waves and winds into a series of low ridges, parallel to the shore.

To the south the land rose gently to form a broad ridge that curved to a high point on the west wall of the crater. This spot, highest on the island, seemed the logical place to plant the Tongan flag, so the climb was begun. The ground everywhere, save along the shore, was made up of fine ash mixed with sharp fragments of scoria, pumice, and lava, a desolate, treeless, waste-land, with only trenchlike gullies to break the uniform curve of the ridges. Walking was difficult, especially for those who had come ashore without shoes.

THE ISLAND IS CLAIMED FOR THE KINGDOM OF TONGA

Upon nearing the summit clouds of sulphurous gases were encountered. These were swept up from the crater by the prevailing trade winds. At times the fumes became almost unbearable, making the eyes smart and bringing on violent fits of coughing. Breathing through cloth gave some relief and on the highest point the vapor clouds were thinner (page 765).

Here, at an elevation of 365 feet, Premier Tugi and his men planted the Tongan flag, without unnecessary ceremony. The ensign of Tonga, last of the Pacific island kingdoms, is not known the world over. It is a red flag with a rectangular field of white in the upper left corner. In the center of this white field is a red cross.

Years before, on an earlier Falcon Island, a ruler had planted this same flag, but the island was subsequently destroyed. The new Falcon is larger than its predecessors, but is formed of the same material. It, too, will probably disappear; but in these days, when new land is at a premium, even in the Arctic regions, who can deny "the Empire Builders" (as our party was jokingly dubbed) a minor thrill when claiming Falcon for the Queen of Tonga?

From the flag station the party followed the crater rim around to the windward side. Here the air was clean and everyone welcomed a chance to survey the island in comfort.

The crater lies on the southeast coast. Its location here is obviously determined

Photograph by J. H. D. Spencer

THE CLIMB UP THE GAS-SWEPT HILL

Upon nearing the summit, clouds of sulphurous gases were encountered. At times these became almost unbearable, making the eyes smart and bringing on violent fits of coughing. Breathing through cloth gave some relief (see, also, text, page 764).

by the southeast trade winds, which during and after eruption carry the fine material to the northwest. The waves, driven by these same trades, continue the work and constantly eat into the southeast side, shifting the material around to the northwest to build an extensive shoal.

The eastern wall of the crater has the same profile as the western wall, but its summit rises only 200 feet above sea level. On the east it slopes gently to the top of the sea cliff, while on the west it descends more abruptly to the floor of the crater. The bottom of the crater is elliptical in outline and most of its surface is covered by a boiling lake, shaped roughly like a figure eight (see inset map, page 760). The waters in the seaward loop of the figure are a deep, milky green, but in the landward loop they fade to yellowish white. Steam rises from the water and clouds of it drift lazily up the northwest wall. Parts of the lake boil incessantly; other areas bulge upward periodically, bringing black sediment from below.

The crater rim is breached to the southeast, where only a small bit of the original wall remains. This remnant is about 20 feet high and is composed of bedded scoria and ash. On either side of it the storm waves have free access over a low, porous barrier of reworked scoria, through which the lake waters rise and fall with the tide.

The lake is surrounded with ash and sulphur flats, dotted with steam jets, the latter more abundant on the steep western side of the crater than elsewhere. Around the flat is a narrow band of gently sloping land, trenched with V-shaped gullies and grading above into the steep walls of the crater. These are vertically fluted, and in the depressions many steam vents issue. They have deposited quantities of sulphur and other substances, giving the walls a strange appearance. Yellow, orange, or white gullies alternate with the drab ridges.

A YOUNGER CRATER WITHIN AN OLDER ONE

The crater lake and the vividly colored walls are the first impressions received while standing on the eastern edge. A closer inspection shows that there are really two craters, a younger one with steep sides lying within an older one.

The northeastern wall of the former has been breached by rainwash, and a steep gulch separates it from the older crater. Materials washed down the gulch through the notch have been deposited on the crater floor to form a low delta that makes one side of the constriction of the figure eight. Smaller gullies have also built deltas upon reaching the crater floor. These are sometimes peculiarly banded in yellow and gray.

The crater wall is composed largely of fine ash and scoria, but scattered over its surface are numerous volcanic bombs and blocks of solid lava. Most of the bombs are small, but a few reach a length of more than two feet. They are roughly spindle-shaped and represent masses of lava that were thrown out in liquid condition and solidified while still in the air. Many are exceedingly porous, owing to the escape of inclosed gases; others show a concentric banding made by uniform cooling and contraction. Some of the solid angular blocks of lava exceed three feet in diameter. A few are porous, others dense.

These blocks were the only lavas seen on Falcon Island. There were no flows. Several bowlders of volcanic agglomerate (angular fragments of lava firmly cemented in a matrix of finer material) were noted. All of these large masses were much more abundant to windward than to leeward. The trade winds are probably responsible for this; they carry the finer materials away both during and after eruption, and the heavy blocks are thus concentrated.

FLOOR OF CRATER SPUTTERS AND HISSES

In most places it is impossible to descend the crater walls, because the slopes of the poorly consolidated scoria approach 80 degrees. One may, however, without great difficulty, slip and slide down one of several steep gullies to the crater floor. Here one unconsciously pauses before proceeding farther.

On all sides are sputtering and whistling steam vents, which issue from walls that are beautifully mottled in many shades of yellow, orange, and gray. The scene recalls to mind the fantastic pictures illustrating Dante's "Inferno." Indeed, it is an ideal place in which to speculate upon the possible compensations of a future life!

It is rather a weird experience to walk out on the delta that separates the two lobes of the lake. The ground is hot beneath the feet, and off the lake comes a withering blast of fetid air. Each steam jet has a hiss, whistle, or sputter of its own. These sounds do not carry far, and as one walks across the flat they quickly replace each other. A low, quietly sputtering vent passes out of hearing and almost immediately a high-pitched, warning hiss may rise almost between one's feet.

Pumice and fragments of lava lie scattered everywhere. One expects momentarily to break through, yet the ground seems solid enough. The surface of the delta is incrusted with brilliantly colored sulphurous deposits and tiny balls of greenish sulphur litter the surface below a line of pumice that marks high-tide level. The waters of the lake near the edge of the delta boil noisily and have a vile taste. The noises, the odors, and the heat oppress the watcher's mind with a feeling of impending activity. It is with a mild sigh of relief that one reaches the top of the crater wall without mishap.

THE COCONUT IS AMONG THE FIRST ARRIVALS ON FALCON

The present Falcon Island has been in existence only a few months and lies far from steamer lanes. Yet the waves have already washed an odd assortment of foreign objects upon its shores. Wooden boards, a whisky bottle, fragments of glass, shells, bits of seaweed, and a coral head were all found mixed with the scoria of the lee shore. Fragments of coconuts were exceedingly abundant. The Premier found one containing milk, and this was planted in a likely looking spot. There was also a single low bush growing near the shore, but above high-tide level.

After about five hours ashore the party returned to the cutter, where coffee and other refreshments were welcomed by everyone. The return to Nukualofa against a stiff wind and a rough sea was a long and tedious journey, requiring 22 hours. It seemed impossible to leave Falcon Island behind. Darkness eventually hid it from view and everyone slept except Captain Fotu.

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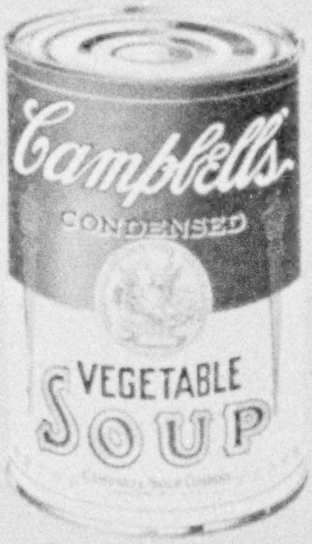

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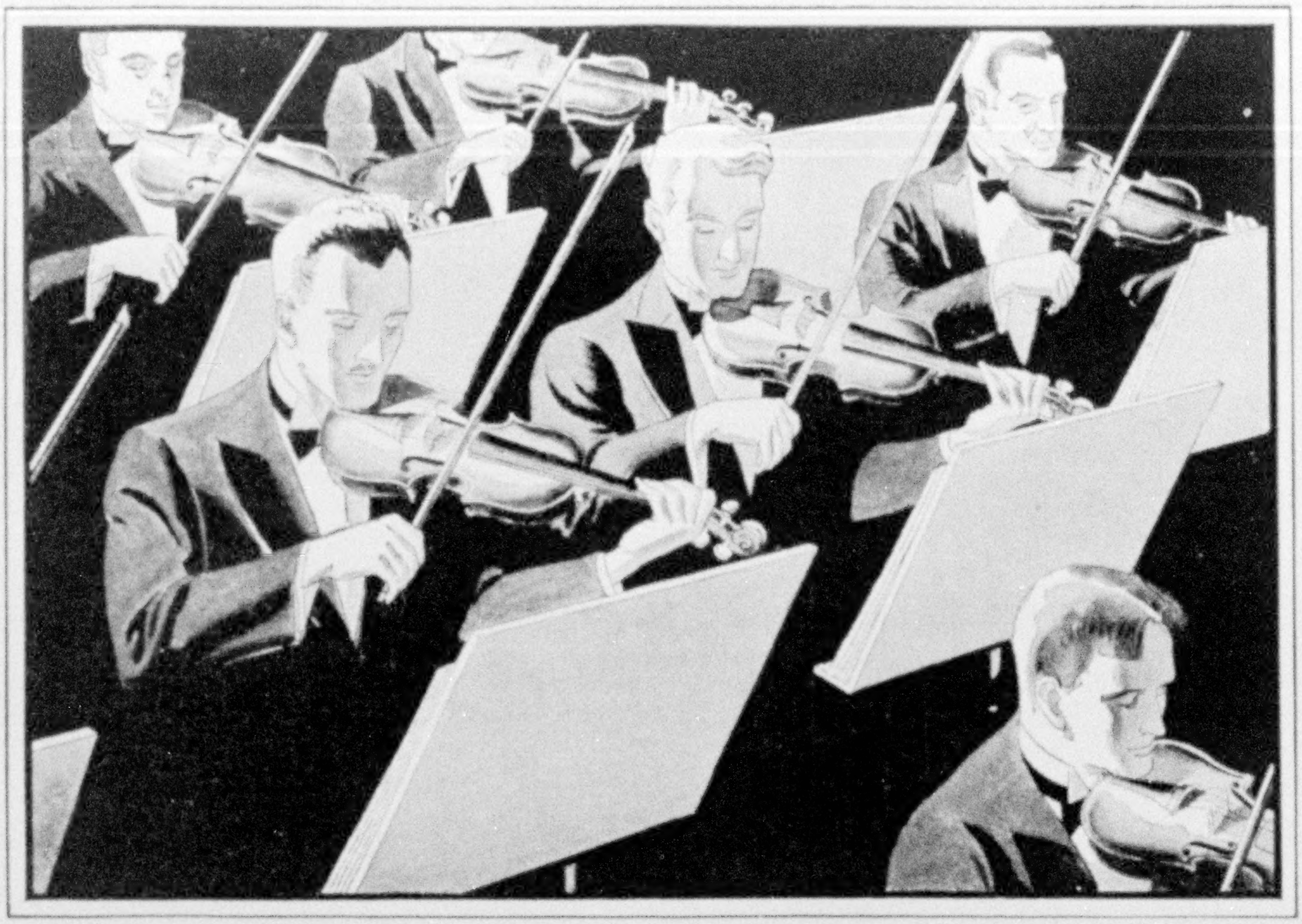

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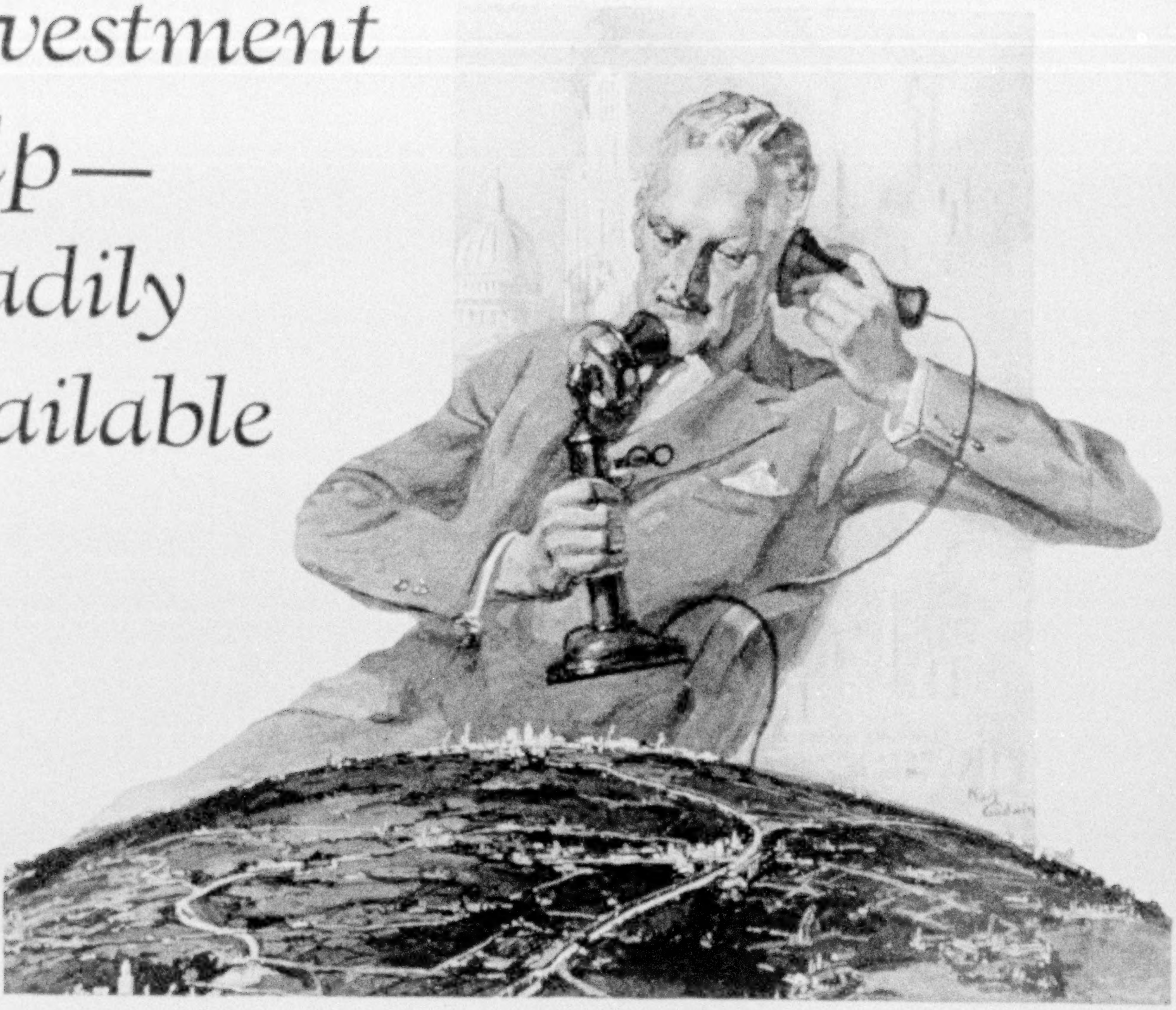

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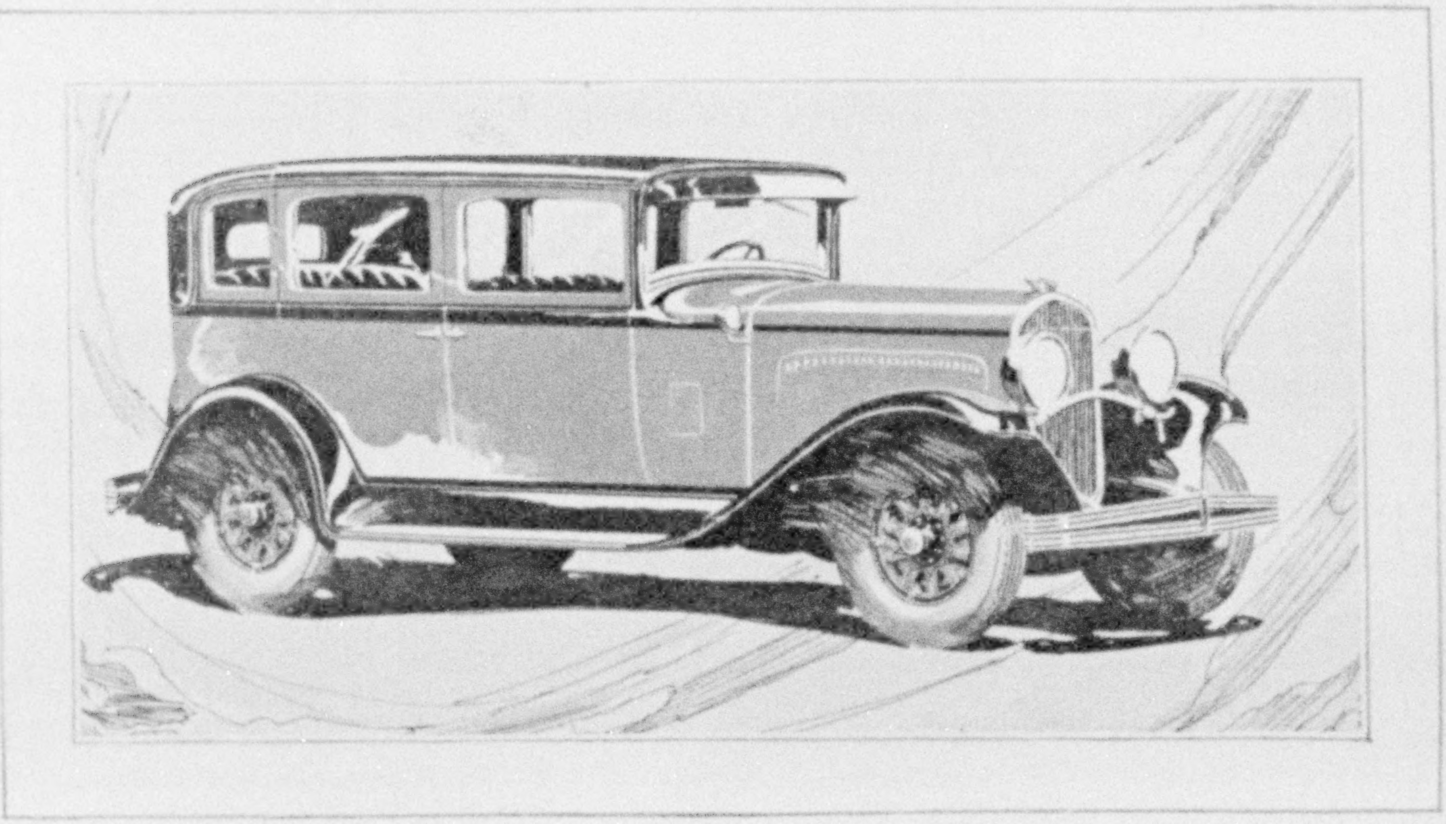

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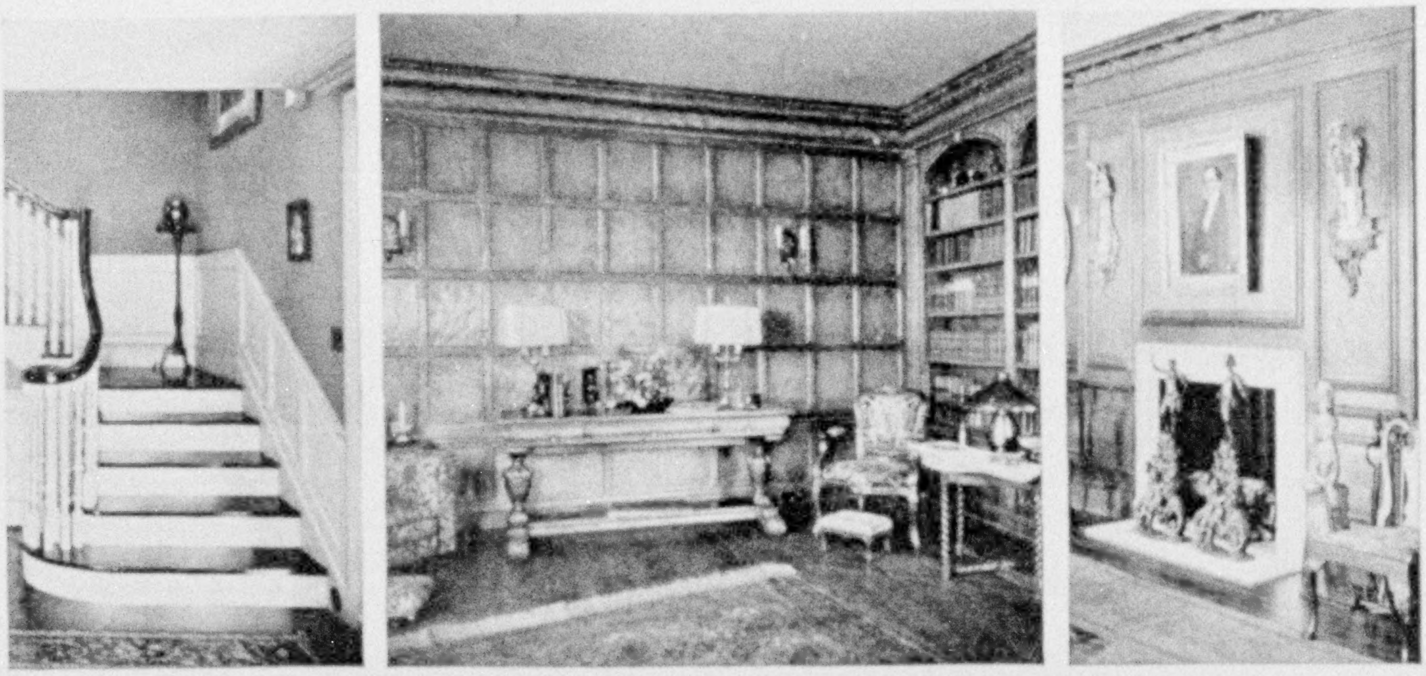

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- Southern Cypress Manufacturers Association, Jacksonville, Fla. — Cypress and Tupelo
- Southern Pine Association, New Orleans, La.—Long Leaf and Short Leaf Southern Yellow Pine
- West Coast Lumberman's Association, Seattle, Wash.—Douglas Fir, Sitka Spruce, West Coast Hemlock, Western Red Cedar
- Western Pine Manufacturers Association, Portland, Ore.—Pondosa Pine, Idaho White Pine, Larch
- National-American Wholesale Lumber Association, New York, N. Y.
- National Association of Wooden Box Manufacturers, Chicago, Ill.
- Maple Flooring Manufacturers Association, Chicago, Ill.
- British Columbia Lumber and Shingle Manufacturers, Ltd., Vancouver, B. C.
- British Columbia Loggers Association, Vancouver, B. C.
- Hickory Golf Shaft Manufacturers Association, Memphis, Tenn.
- American Wood Preservers Association, Chicago, Ill.

A TRIUMPH
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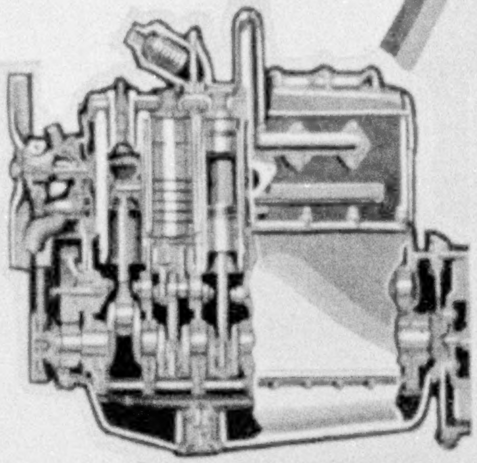
Rich man's car brought within reach of general public by magic of quantity production

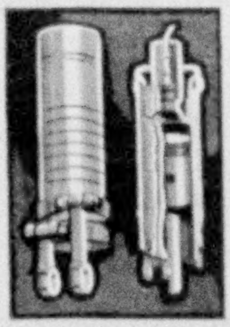
THERE is no finer example of what mass production can accomplish than the present low prices of the Willys-Knight Six.

For a decade and a half, Willys-Knight's every effort was bent toward this achievement—a low-priced Six, powered by the double sleeve-valve engine, and maintaining all of Willys-Knight's quality.

And this year, through constant improvements in manufacturing and engineering methods, through large scale production and increasing sales, Willys-Knight has at last broken down the price barrier—and hundreds of thousands of enthusiastic motorists now enjoy the smoothness, power, economy and increasing efficiency which are possible with no other type of engine.

The Knight engine has no complicated valve mechanism. In each cylinder, two sliding metal sleeves combine with the spherical cylinder head to form a perfectly sealed combustion chamber. As a result, the Knight engine gives high uniform compression *with any gas.*





Two sleeves move silently up and down

STANDARD SIX COACH

$995

Other models $995 to $1095. Prices f. o. b. Toledo, Ohio, and specifications subject to change without notice.

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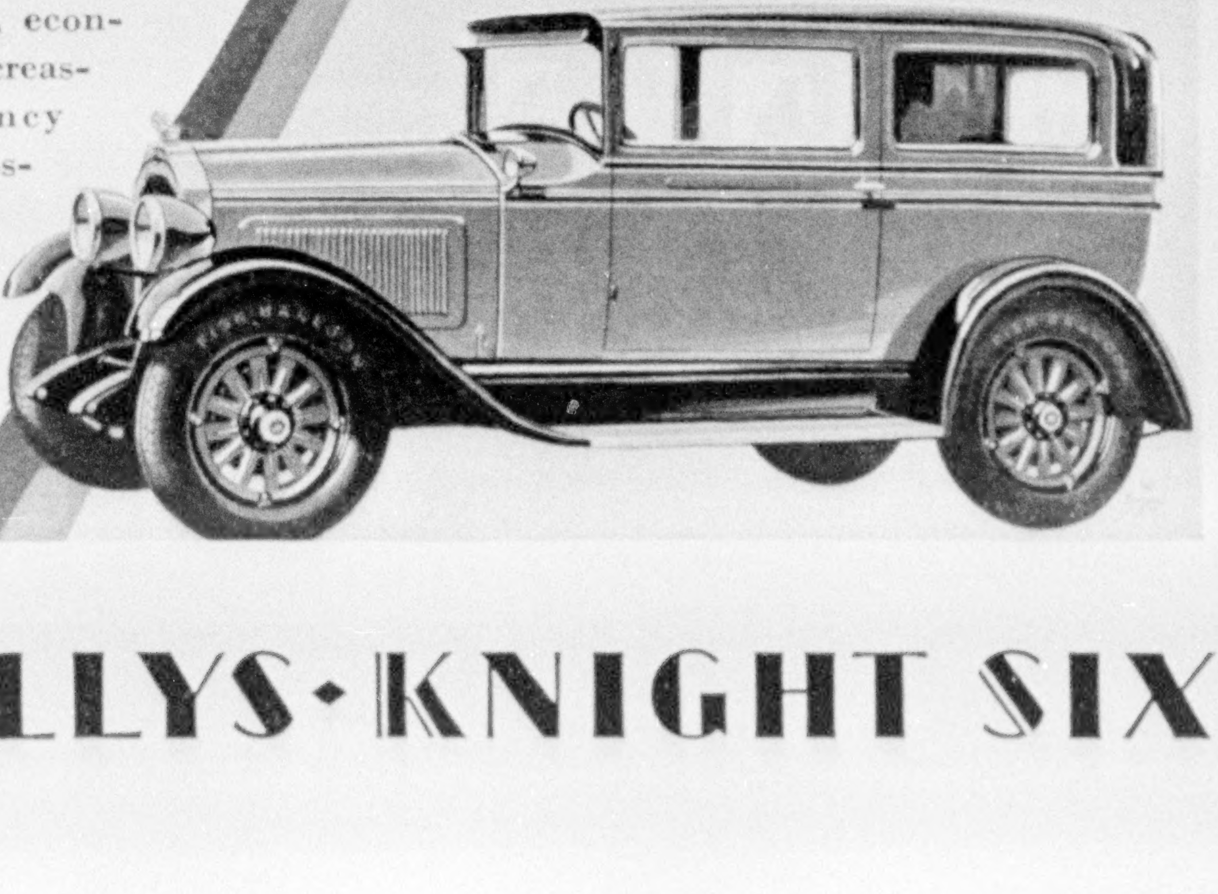
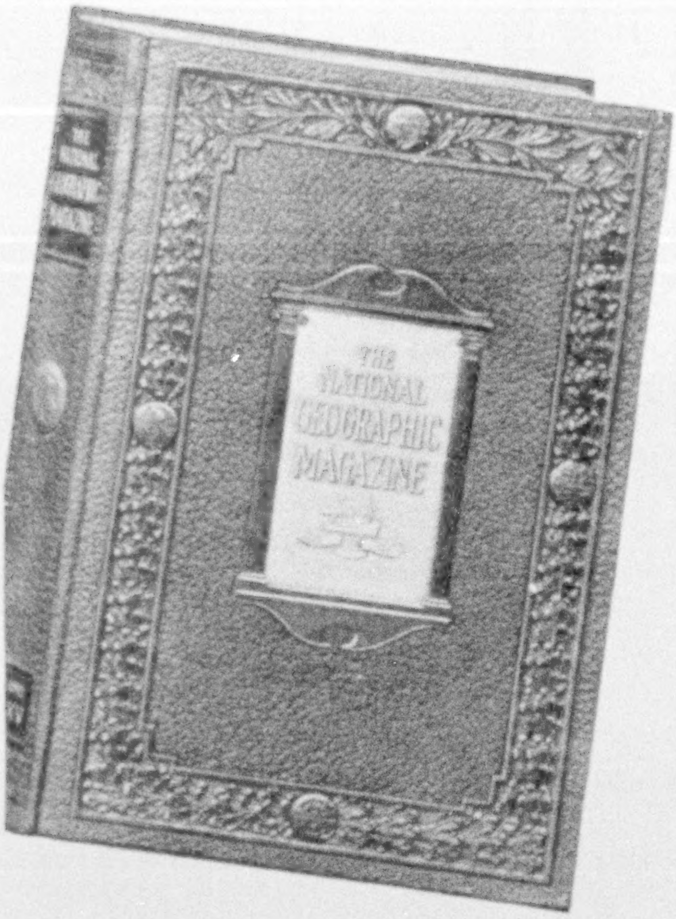


WILLYS-KNIGHT SIX



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> —*O. M. Wells, in the New York Times.*

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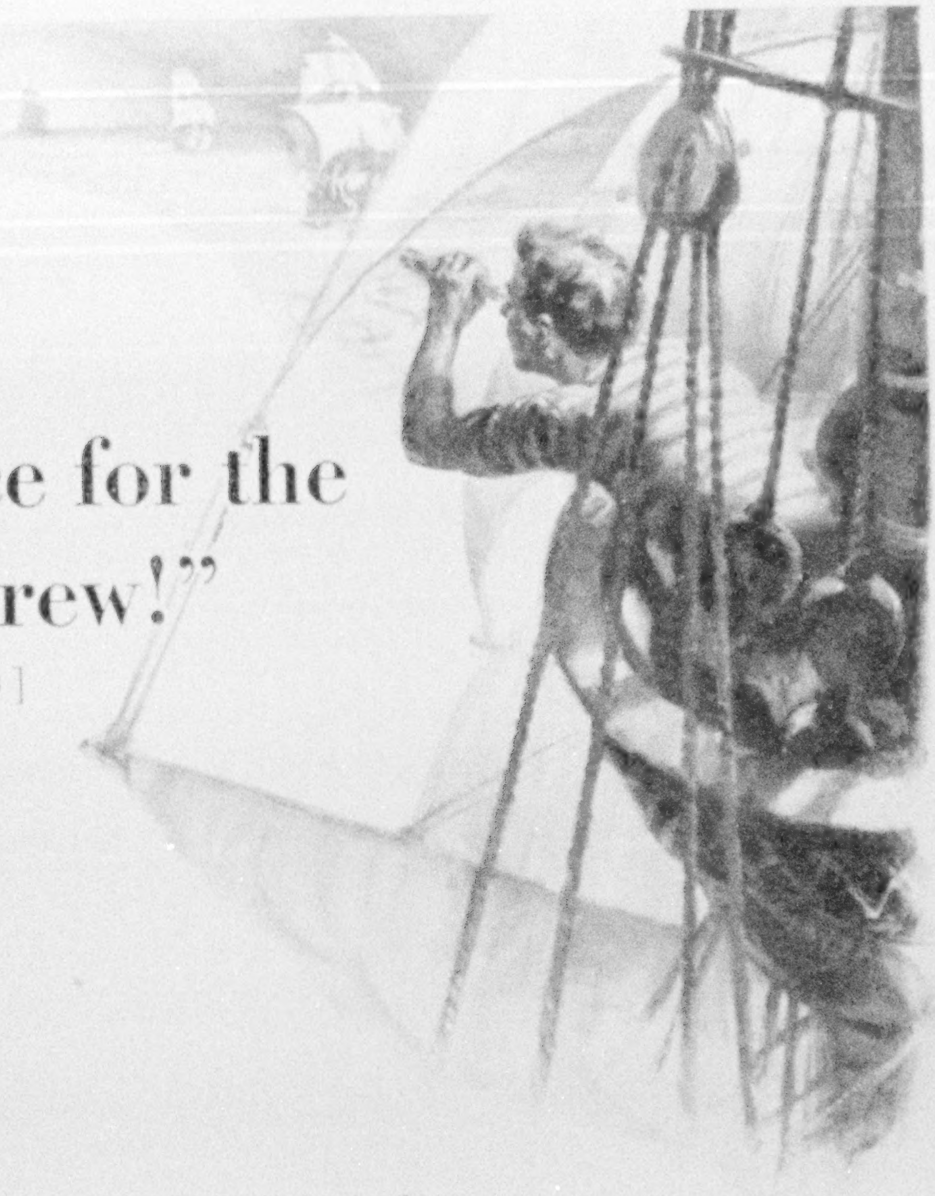

"Lemon juice for the *Dragon's* crew!"

[A STORY ABOUT VITAMINS]

One calm August day in the reign of good Queen Bess, four stately East Indiamen glided into the blue waters of Saldanha Bay at the bottom of Africa.

The *Hector*, the *Susan*, and the *Ascension* were scurvy-ridden. The fourth ship, the *Dragon*, carried a healthy crew.

Why? No one knew. Rations on all four ships were alike—except for one seemingly insignificant item. Captain Lancaster of the *Dragon* had ordered "Three teaspoonfuls of lemon juice every morning for each seaman."

Vitamins guard your health

Three centuries elapsed before Medical Science discovered the vitamins and proved that lack of these mysterious elements in our food causes malnutrition and disease.

Scurvy, for example, results from lack of Vitamin "C" found in many fruits and vegetables—including the lemon juice that saved the crew of the *Dragon*.

Rickets is another such "deficiency disease." Millions of healthy, chubby youngsters now growing up owe their health—even their lives—to our new knowledge of the rickets-preventing Vitamin "D."

Up in the North Atlantic the waters are alive with tiny drifting organisms called plankton, which are rich not only in Vitamin "D", but also in Vitamin "A"—the vitamin which prevents certain eye diseases and helps to promote bodily growth. The plankton are eaten by little fish. These in their turn are devoured by bigger fish, and the cod preys on them all.

Cod-liver Oil is rich in vitamins

From the finest codfish obtainable is made Parke-Davis Standardized Cod-liver Oil. Doctors have long recognized its value in building healthy bones and sound white teeth and in preventing rickets. Customary Parke-Davis expert knowledge and skill assure physicians of a pure, vitamin-rich oil, which is distinguished by being as pleasant to take as the purest olive oil.

A PERSONAL NOTE

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An Announcement

that is unusually timely in the darkness of midwinter

FOUR o'clock of a winter's day, or ten o'clock at night. . . . Rain or sleet on the window-panes. . . . Wet and stormy weather. . . . The sun is far south, and everything is damp and cold and gray. But now, in your own home, you can have sunshine—real sunshine—whenever you wish! Sunshine warm and glowing as a sea beach in summer. Sunshine filled with the life-giving rays that make strong bodies and minds.

Impossible, you say. But it is not impossible. It is an accomplished fact. The Eveready Sunshine Lamp reproduces, virtually complete, the visible and invisible rays of the sun, exactly as they reach the earth. You get the light rays, the ultra-violet rays, the infra-red. And you get them in just the same relative proportions as in June sunshine.

Think of the advantage of it! Now you can take your sun-bath all year round, either by night or day. You can stretch yourself out and absorb the warmth, the light, the stimulating ultra-violet rays. You can be as bronzed, tanned and healthy-looking in January as in July.

That's what the Eveready Sunshine Lamp will do for you. Its performance is little short of miraculous. Yet it is firmly founded on hard scientific fact. Into its design have gone 51 years' experience in the development of arc light carbons. The National Carbon Company was the pioneer American maker of lamp carbons. It maintains the leading laboratory devoted to the study of the properties of light from the carbon arc. Its scientists are authorities.

In this laboratory it was discovered that there is only one way to reproduce the sun's rays in their entirety. That is by means of the carbon arc. And in this laboratory was found the best method of providing a suitable carbon arc lamp for home use. The Eveready Sunshine Lamp is the result. In its probable effect upon the health and happiness of a nation, it is one of man's greatest inventions.

Reporting on its test of such a light as this, the U. S. Bureau of Standards stated: "Of all

EVEREADY
Sunshine Carbons

The Eveready

Now ready to bring sunlight's essential rays into the home

The Eveready Sunshine Lamp

the artificial illuminants tested, it is the nearest approach to sunlight."

The new Eveready Sunshine Lamp is thoroughly modern, ready to be plugged into any convenience outlet in any home; so designed that it can be operated by anyone with entire safety.

A time-clock switch is provided, which may be set for any exposure from 1 to 30 minutes. Should you fall asleep under the soothing rays of this lamp, the current will be cut off automatically at the predetermined time, thus avoiding over-exposure with possible sunburn.

There is a special glass screen or filter in front of the twin arcs. This filters out a few rays not found in natural sunshine, and at the same time completes the enclosure of the arcs.

The height of the lamp is adjustable.

It is shock-proof. Thoroughly insulated. Has no exposed live parts. Opening the inner door to change carbons cuts off the current.

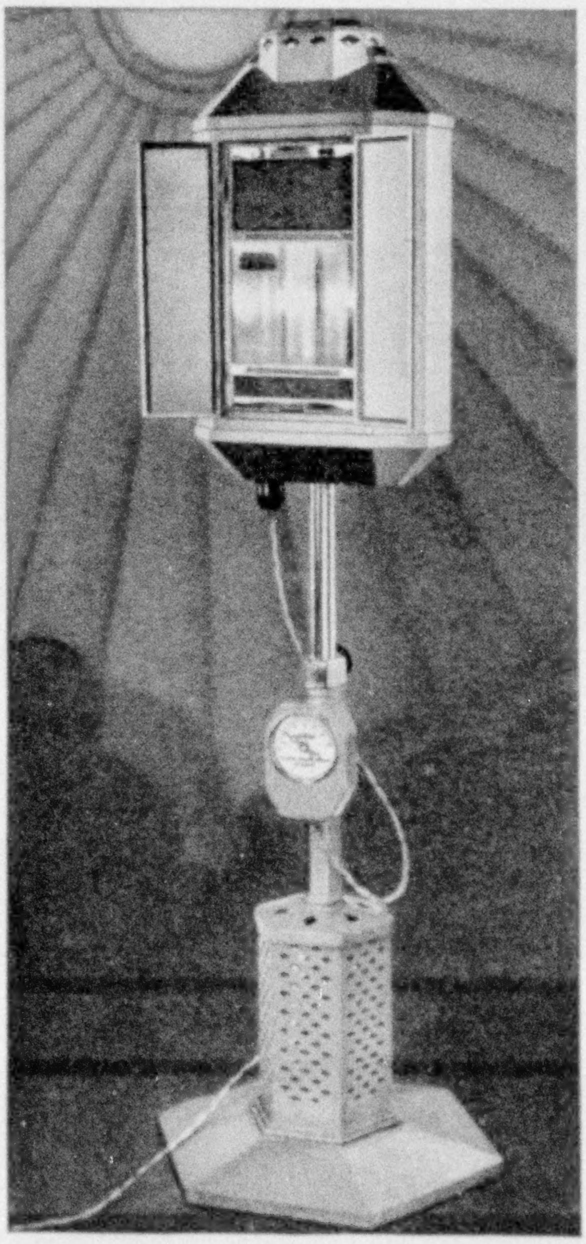
The Eveready Sunshine Lamp is beautiful in appearance, strongly built and stands firmly on a wide base. It rolls easily on ball casters.

So marvelous are the effects of this light that you may be tempted to use it in treating yourself or members of your family for illness. But the same light that is so surprisingly beneficial to the healthy person may be ineffective or even dangerous in certain forms of disease. Avoid the dangers of self-diagnosis. If you are sick, see your doctor and be guided by his advice. He may or may not use light.

The great majority of us are well, however, and may use the Eveready Sunshine Lamp freely to build and preserve our health.

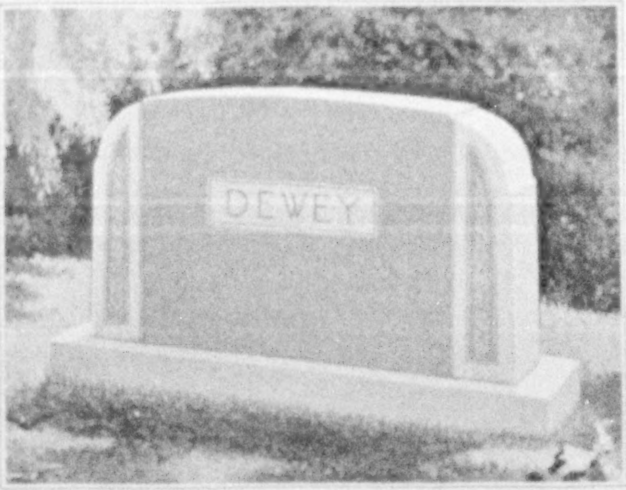
Write for booklet explaining the value and uses of this lamp and of the light it produces. National Carbon Company, Inc., Cleveland, Ohio. Unit of Union Carbide and Carbon Corporation.

The new Eveready Sunshine Lamp plugs into any convenience outlet. Price, complete with two pairs of special goggles and ten Eveready Sunshine Carbons, ready to operate, $137.50. For sale by electric lighting companies, electrical specialty dealers and physicians' supply houses.



Sunshine Lamp

EVEREADY
Sunshine Lamp



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[Write for booklet "G"—"How to Choose a Memorial"]

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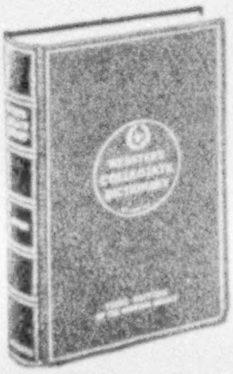

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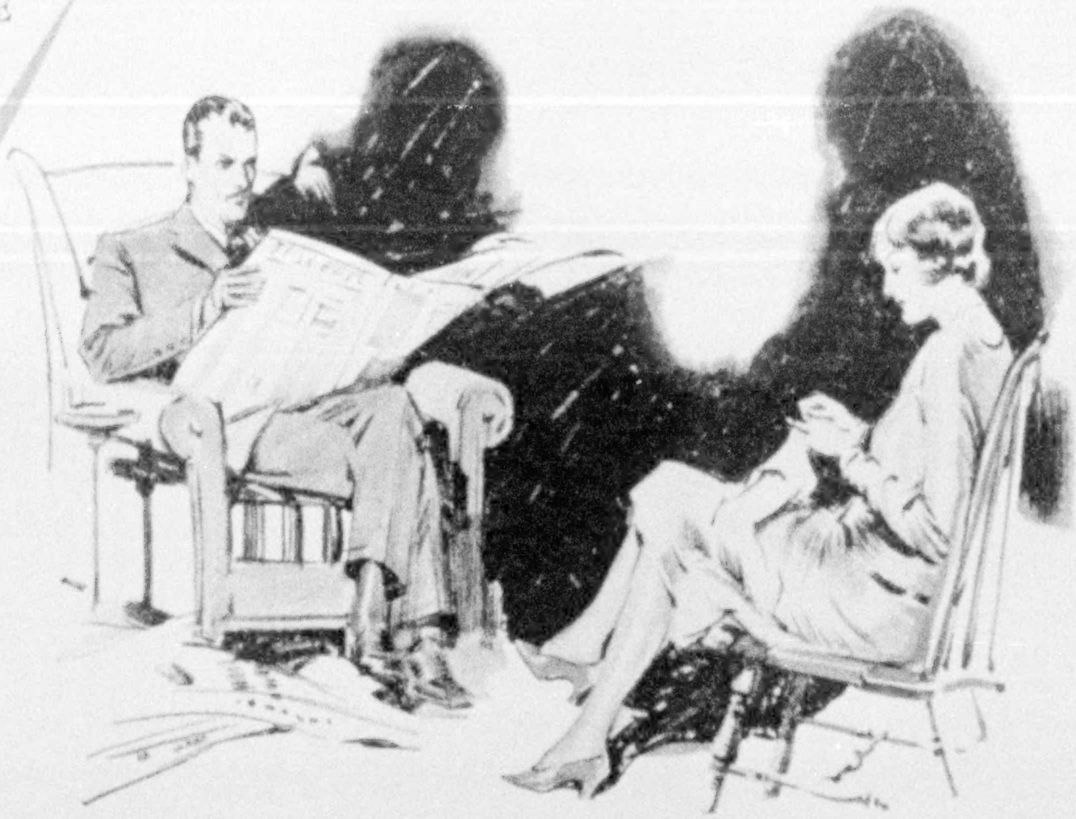

If you could read your wife's mind . .

This is the season of perplexity for husbands . . . "What would she like for Christmas?" . . . The unanswered question haunts you.

You are wishing you could read your wife's mind . . . The next best thing is to put yourself in her place—to think of the 1,095 meals to be prepared during the coming year—of the tiring hours in the kitchen—of the difficulty of keeping help.

Logically, your mind turns to KitchenAid . . . At the snap-of-a-switch, this Electric Maid will do all the hundred-and-one food-preparing tasks, better and more quickly than by hand—and with *none* of the exhausting labor. It is "magic in the kitchen"—a priceless, *practical* magic that has won a place for itself in thousands of homes.

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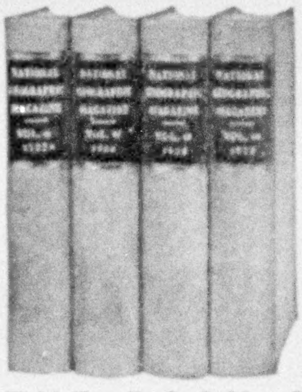

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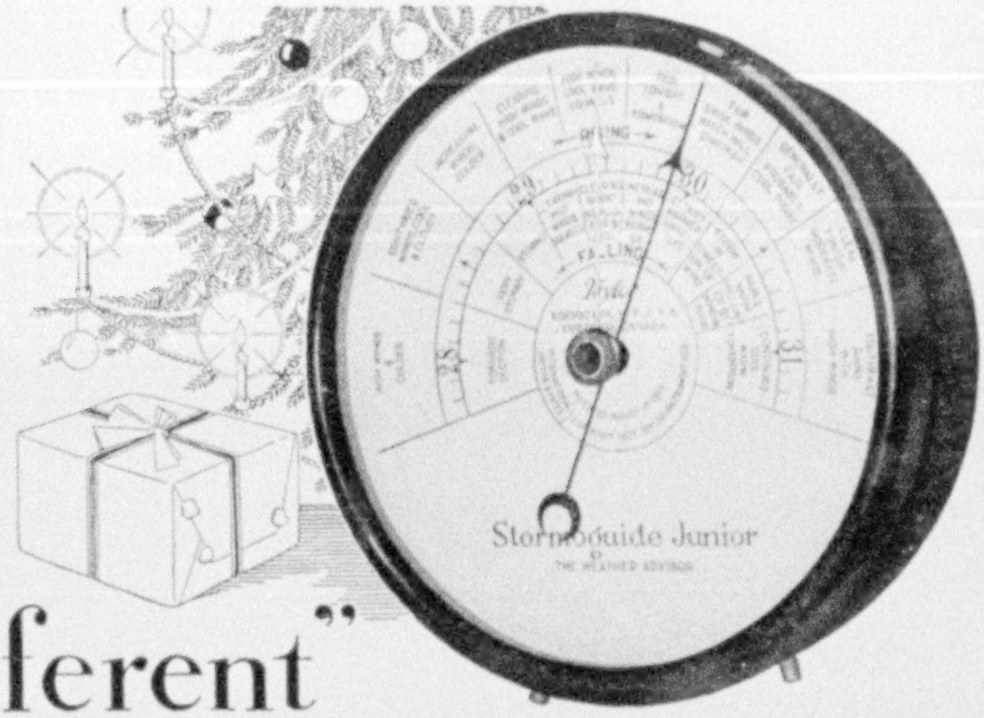

It's a real problem, isn't it, to find the gift that really is different—one that you know will please—yet one that you want to be sure will not be duplicated by another giver?

This year before you begin your tiresome search of the shops, seeking the unusual gift for Dad, "for whom you never know what to get," or brother, "who has everything and *just doesn't* need ties or shirts or sox," or grandpa, "who is *so* hard to buy for," consider the weather and the universal interest everybody has in this common subject.

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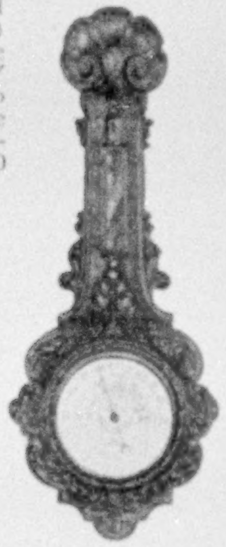

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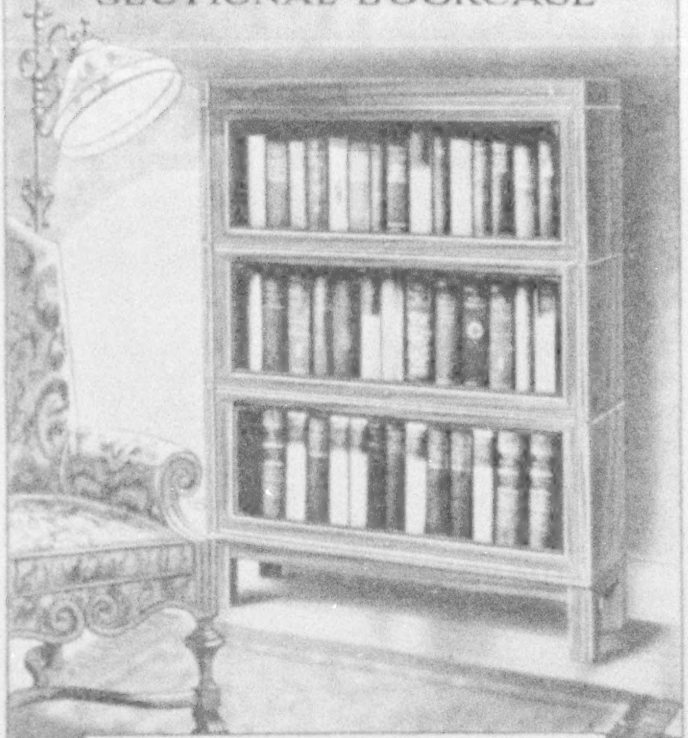

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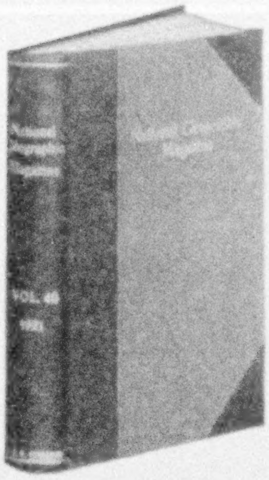

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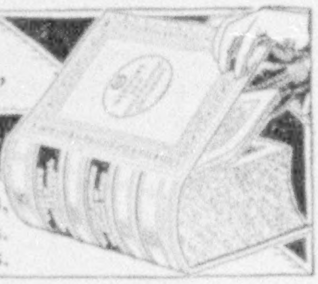

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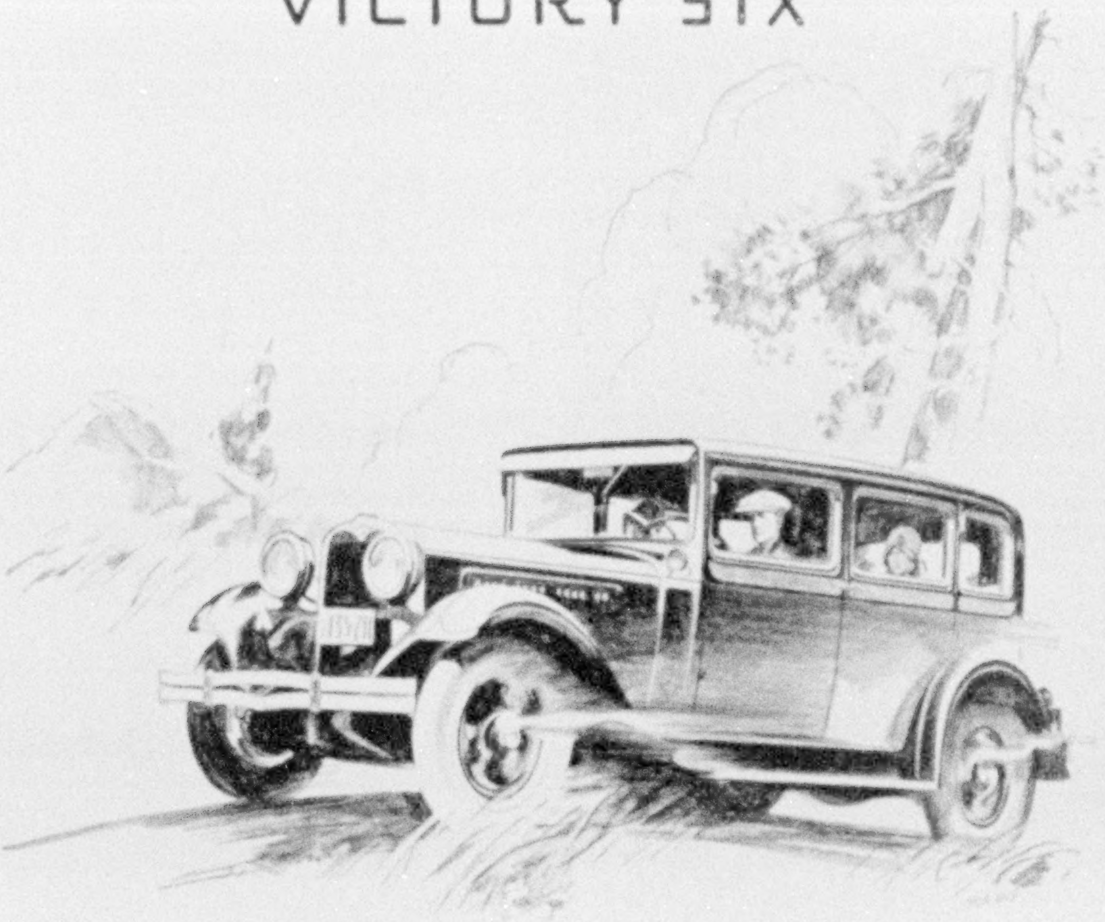

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Victory Six roadability and performance have brought to its price field a revolutionary new luxury in motoring.

No car in the world is built the Victory Six way, and no car at near its price can match Victory steadiness on the curves, Victory handling ease, or Victory smoothness at high speed on rough roads.

These qualities result from the fact that the Victory chassis is extremely low and that body sills are entirely eliminated by this new and exclusive Dodge design.

And now these brilliant new cars are available in 9 beautiful body styles—bigger and more luxurious than ever, with wider seats and doors, still greater headroom, smarter lines and colors, soundproof Victory coachwork and the rugged dependability that you have always associated with the great name Dodge Brothers.

PRICES—*Touring Car, $995; Roadster, $995; Coupe, $1045; 4-Door Sedan, $1095; DeLuxe Sedan, $1170; DeLuxe 4-Passenger Coupe, $1170; Sport Roadster, $1245; Sport Touring Car, $1245; Sport Sedan, $1295—f. o. b. Detroit.*

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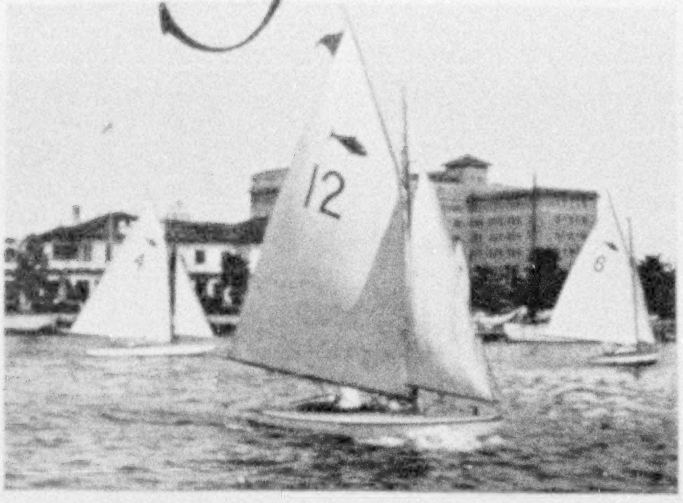
Down
to
Sunny St. Petersburg
FLORIDA



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FOR rest or recreation this winter come down to delightful St. Petersburg, the famous "Sunshine City" of Florida's Gulf Coast. Here winter days are warm and sunny . . . . temperature around seventy . . . balmy breezes blowing through the palm trees . . . healthful sunshine 360 days a year.

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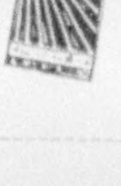

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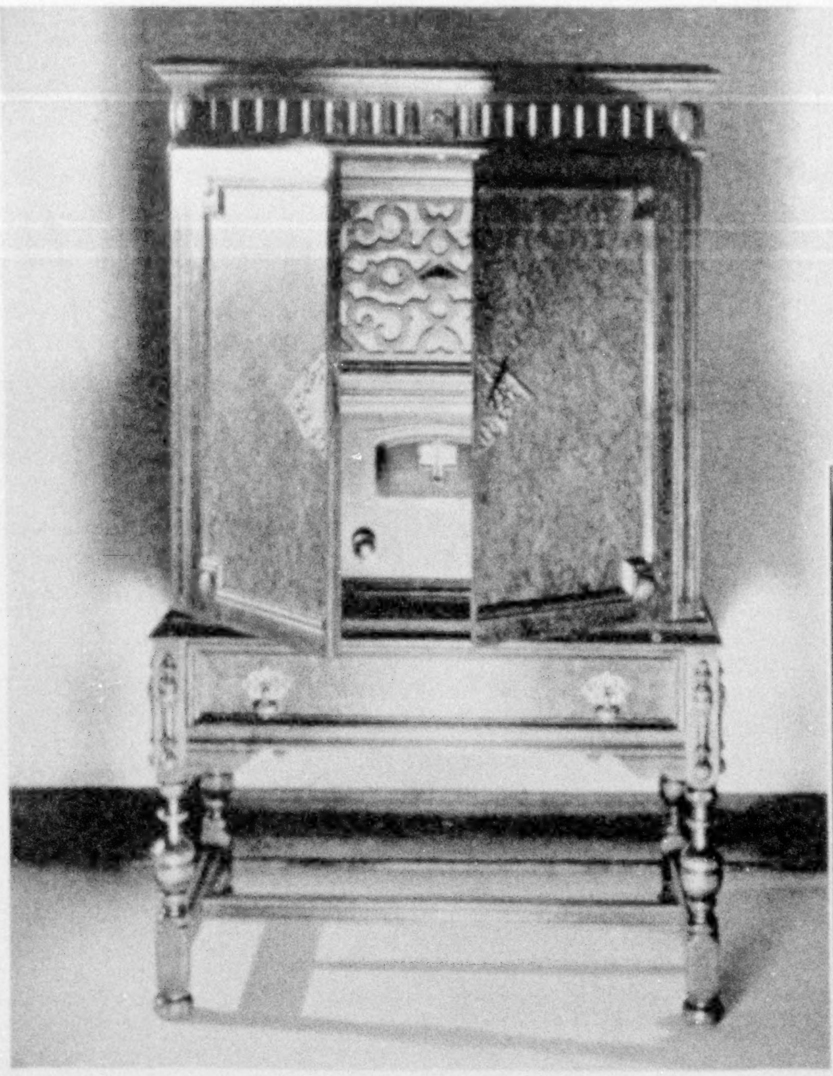

RADIO *or recorded music at the turn of a switch . . .* SYMPHION *through an entirely new principle converts the ordinary 60-cycle AC house current to 3,000,000 cycles . . . This makes possible the use of the* 201A *tube with its far wider range of frequencies and excludes heterodyning and hum . . . Result: every tone is reproduced—as it is played.*

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for Music Connoisseurs

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Both the phonograph and the radio have captured the general public. But there has always been a special public—musicians and music connoisseurs—who have not been satisfied.

Their attitude has been that reproduced music leaves out certain notes in the upper and lower register, and esthetically important overtones.

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Ask your dealer to play Schubert's Unfinished Symphony for you—its purity of melodic form requires perfect fidelity in reproduction; you will find that the Symphion gives this perfect fidelity. Then ask for music over the air. It will be played in the same tonally complete manner.

The cabinets are by Berkey & Gay. Let your dealer demonstrate their beauty in your home, as well as the marvellous quality of Symphion music. Fansteel Products Company, Inc., North Chicago, Ill.

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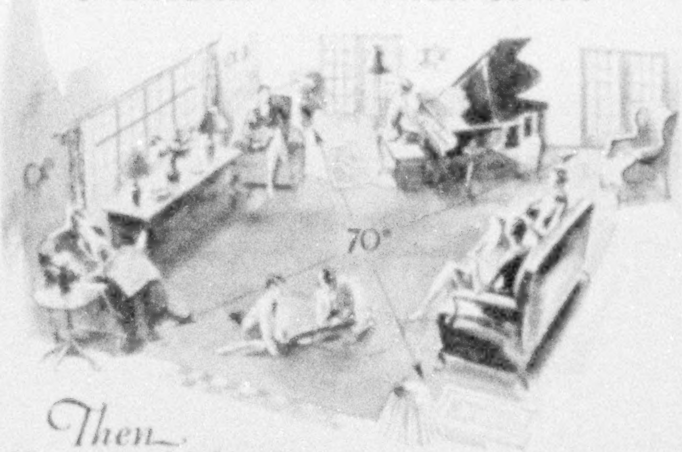

Then However Cold or Windy There'd be comfort in Every Corner

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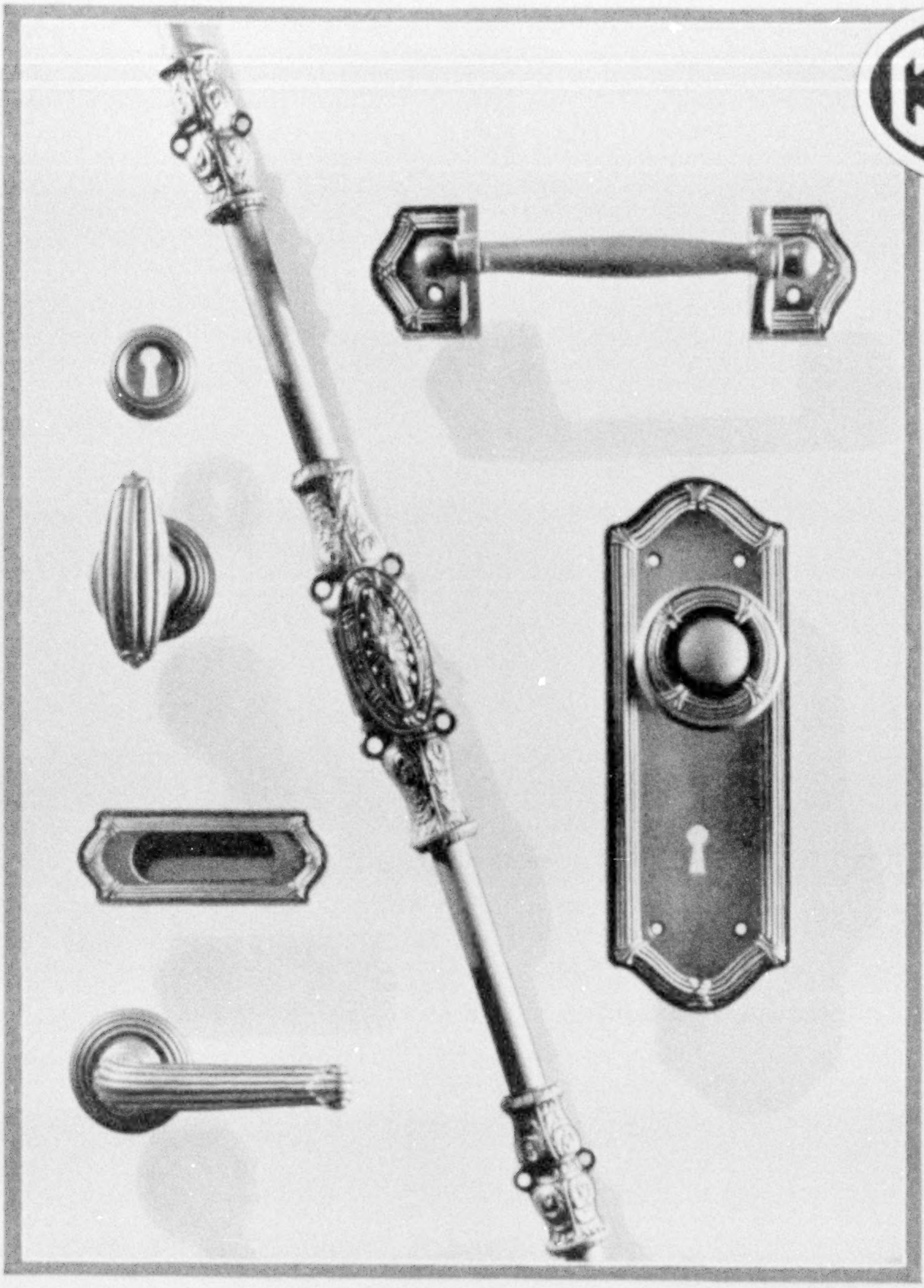

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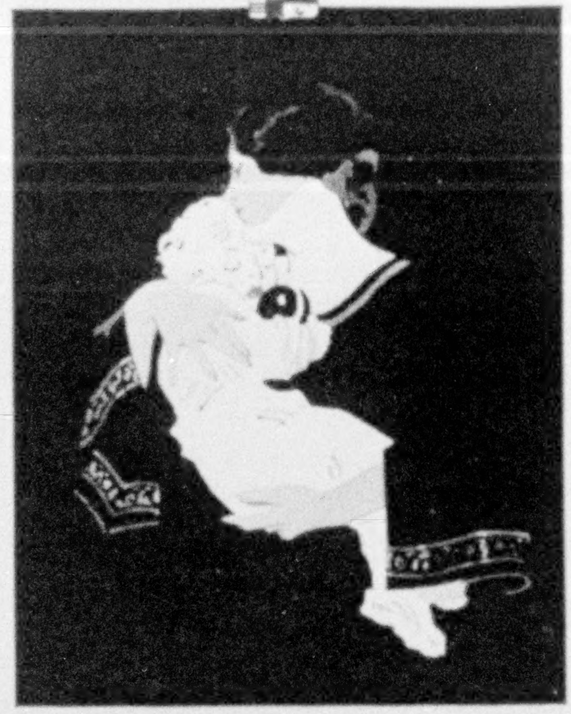

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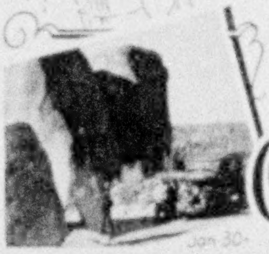

Colorado Springs
Manitou *and the* *Pikes Peak Region*

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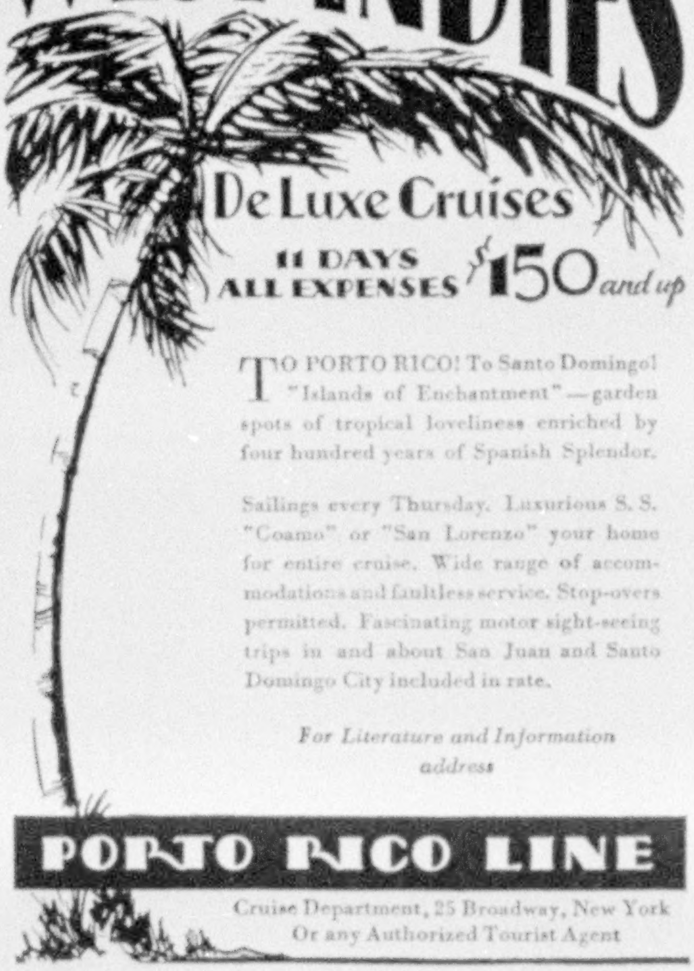

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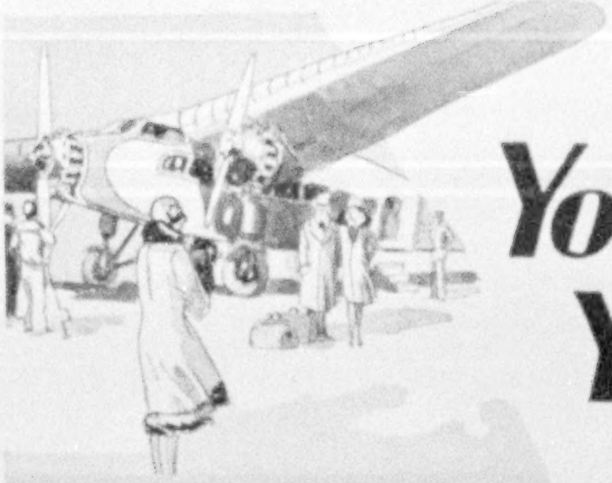

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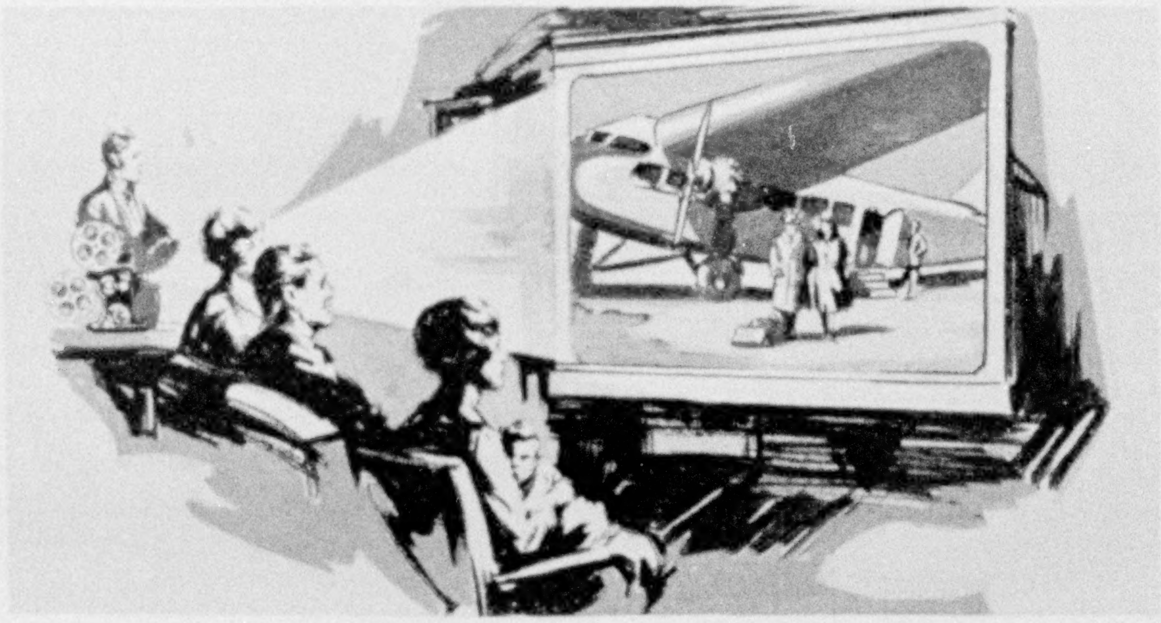

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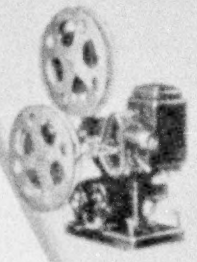

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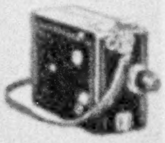

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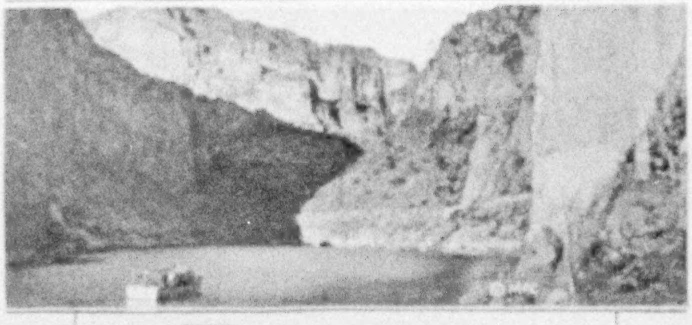

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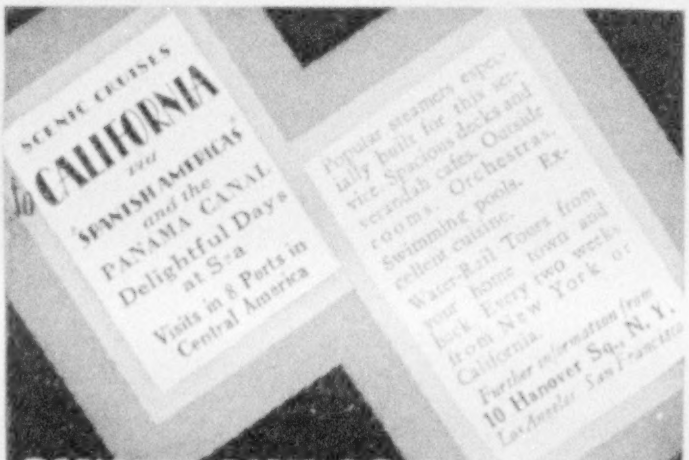

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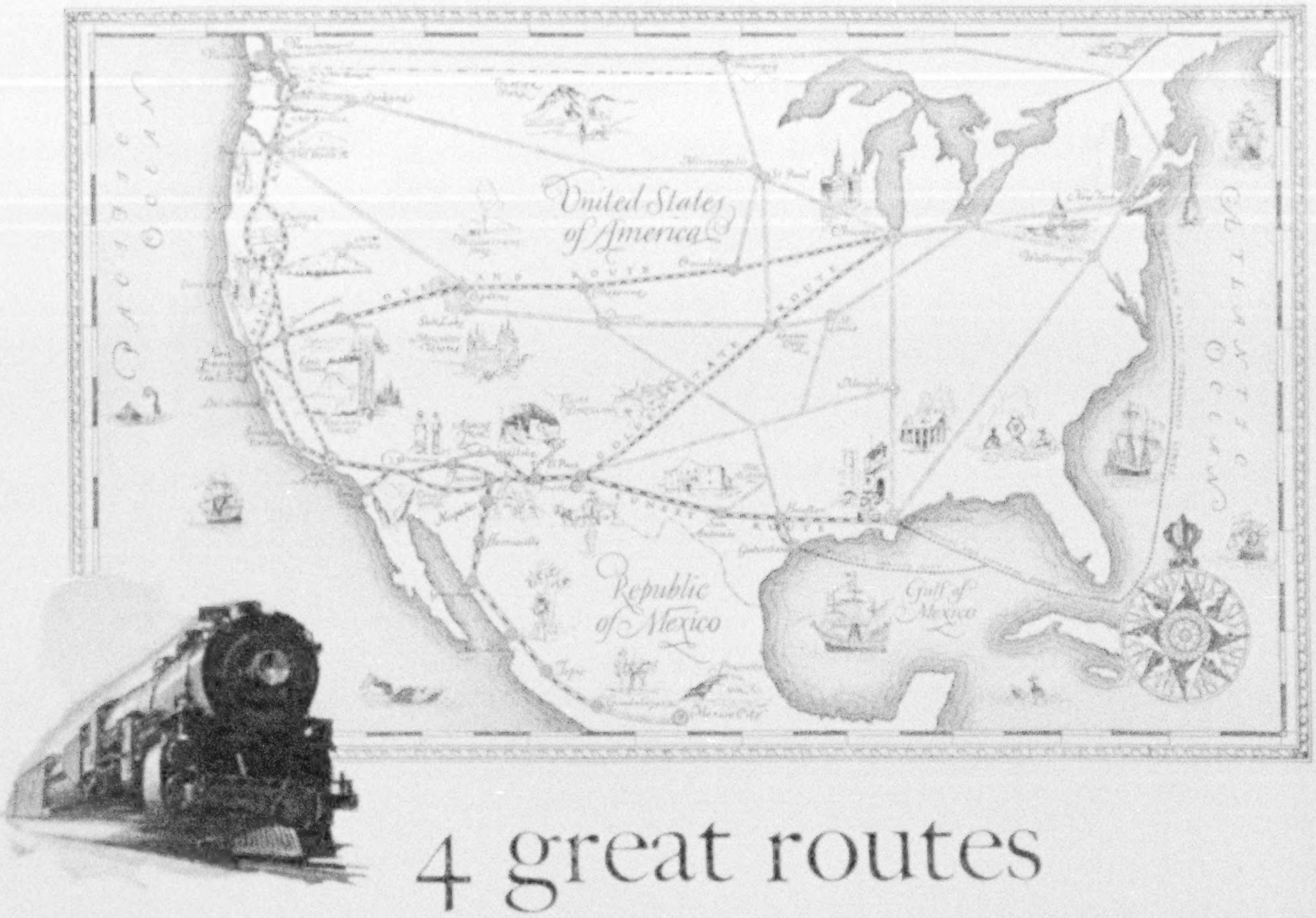

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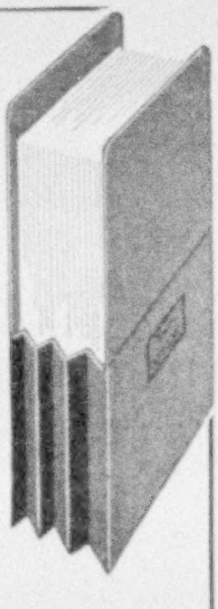

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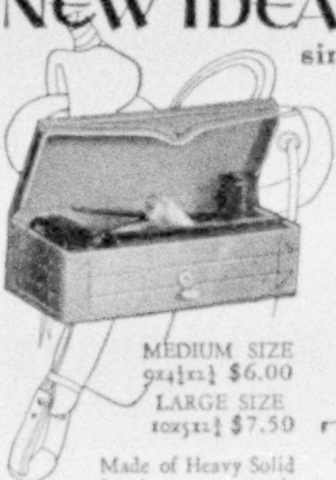

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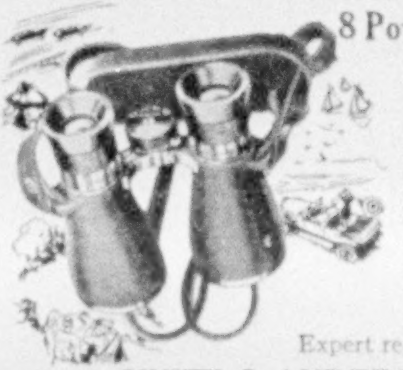

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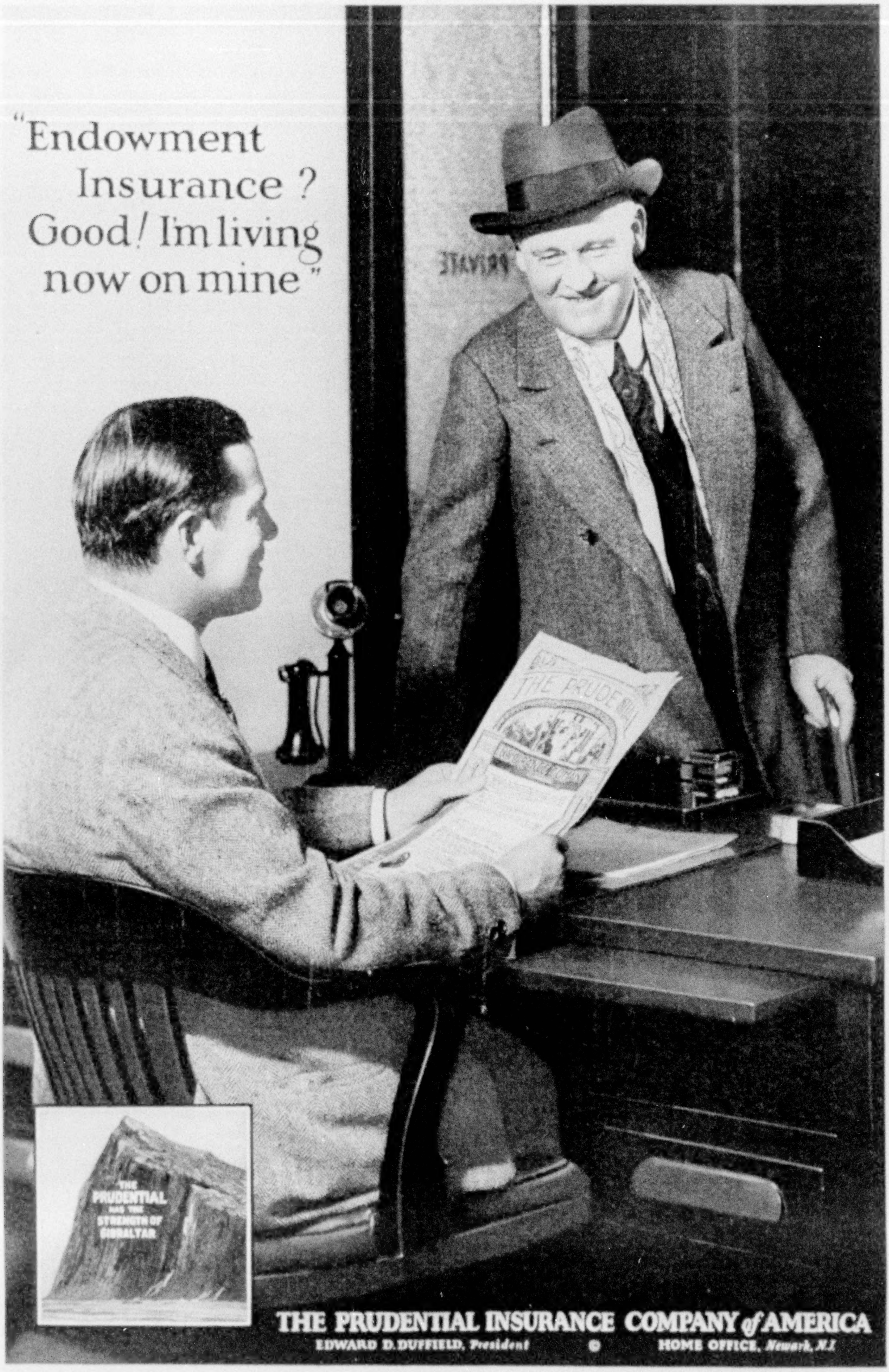

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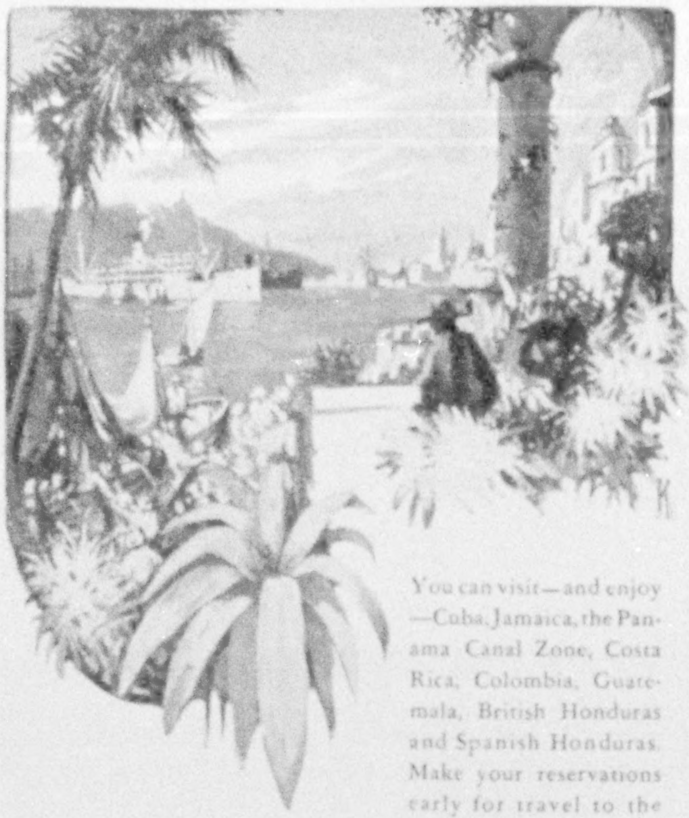

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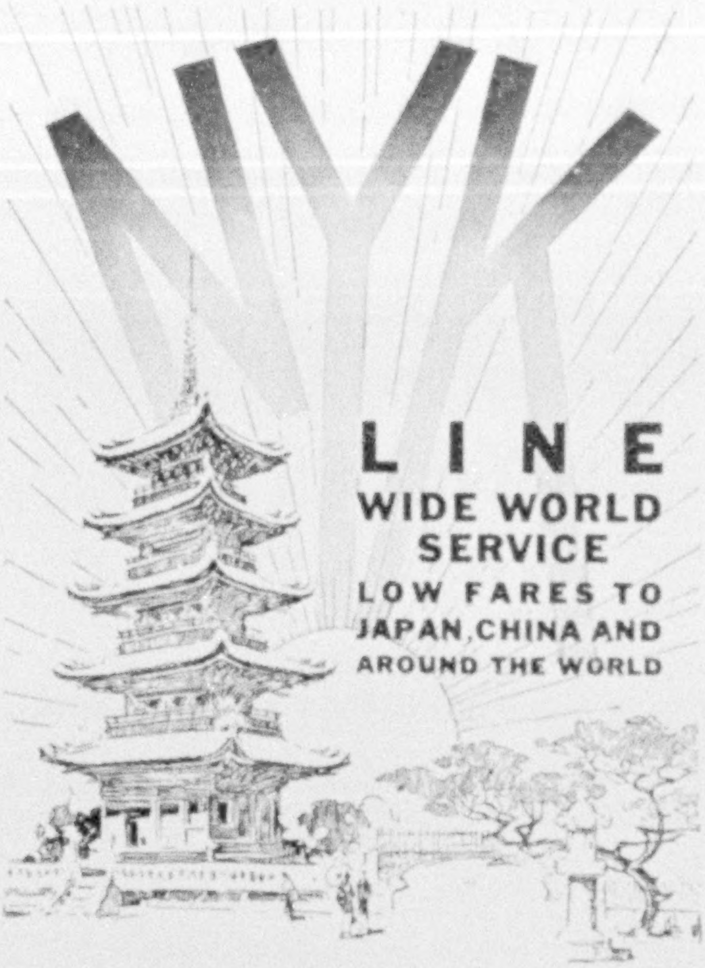

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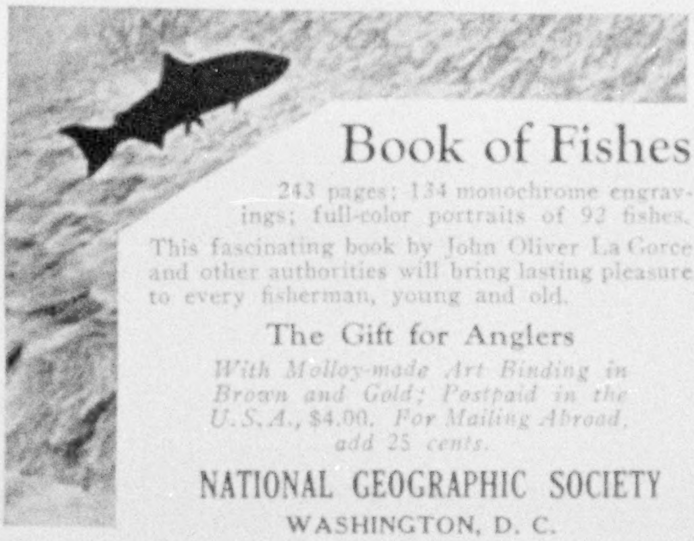

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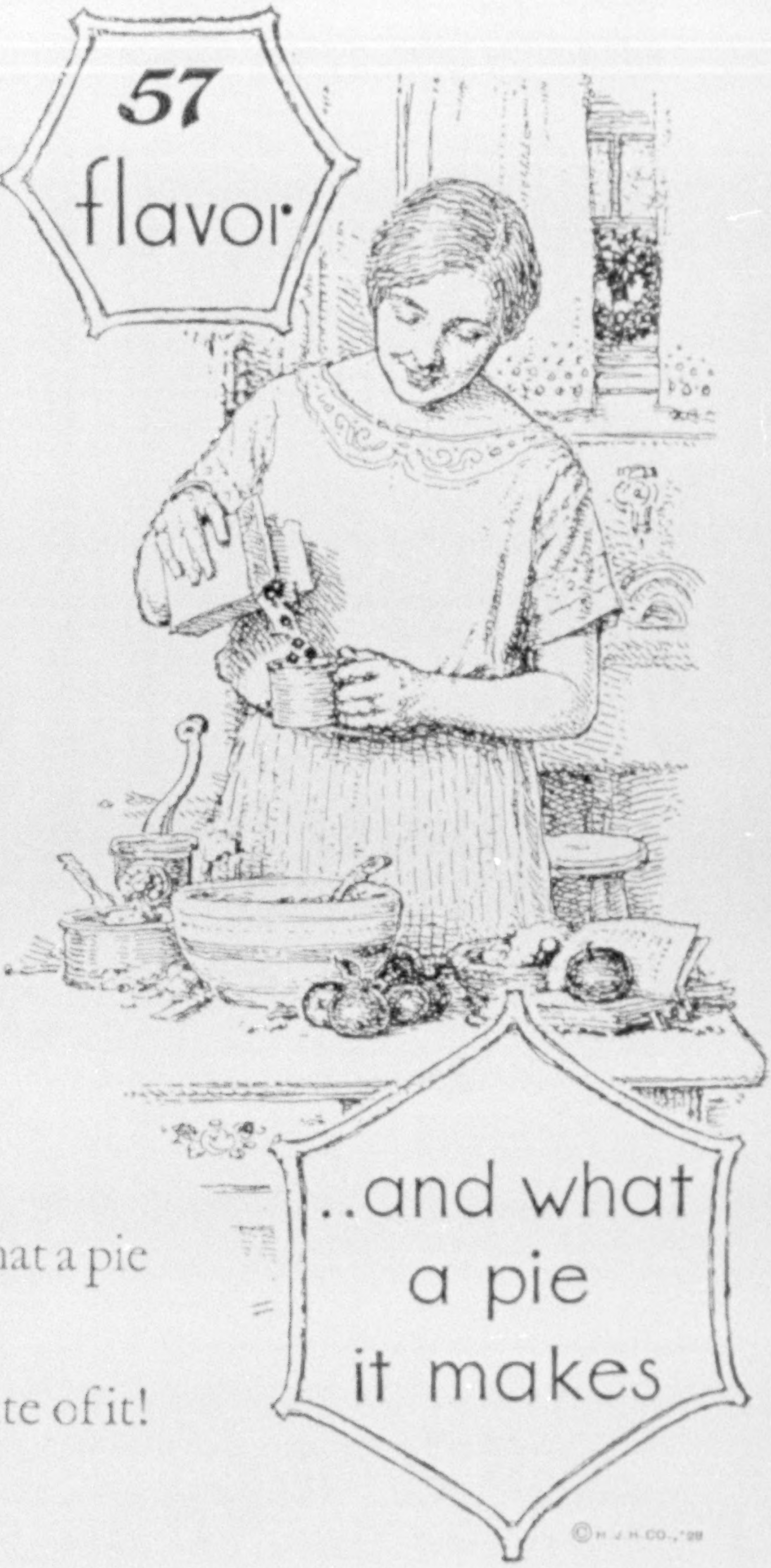
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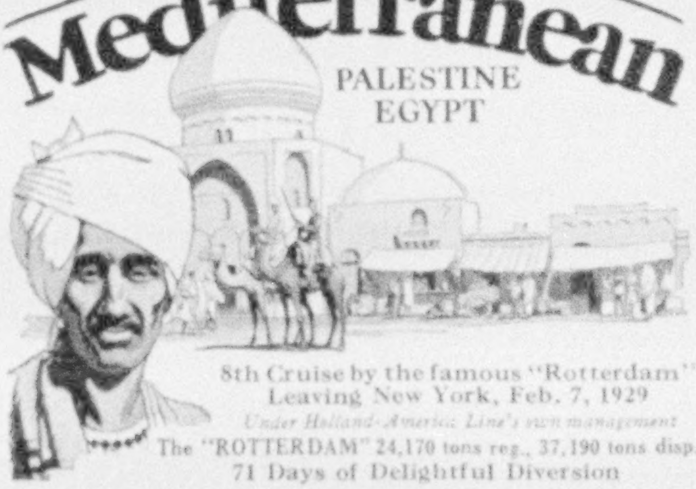

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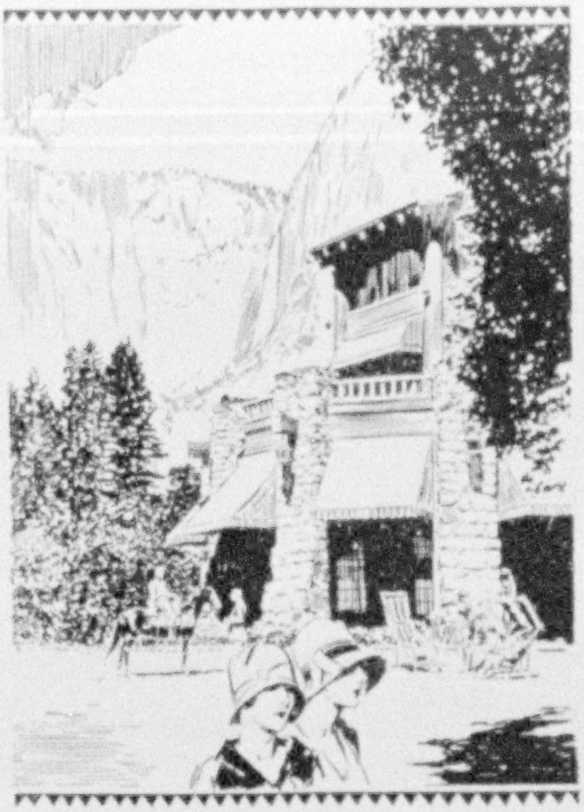

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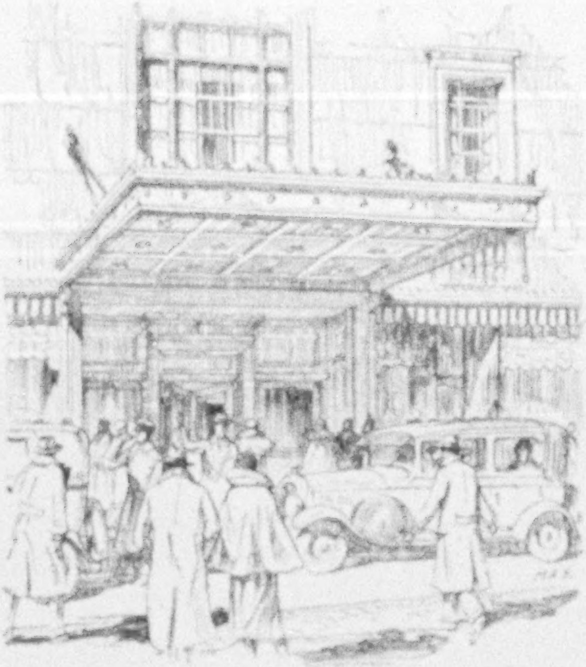

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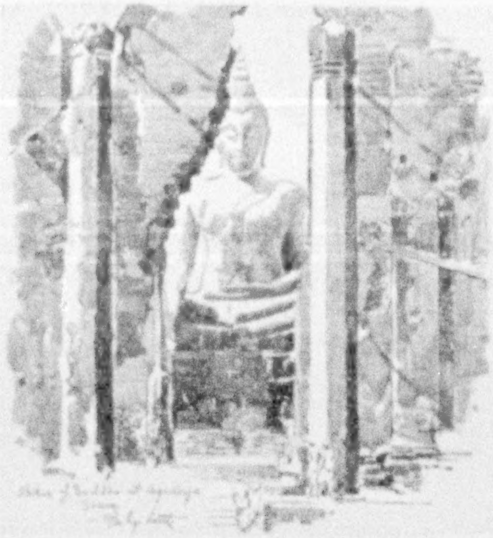

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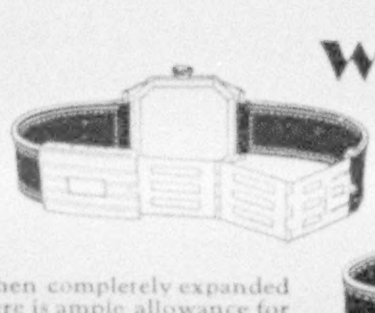
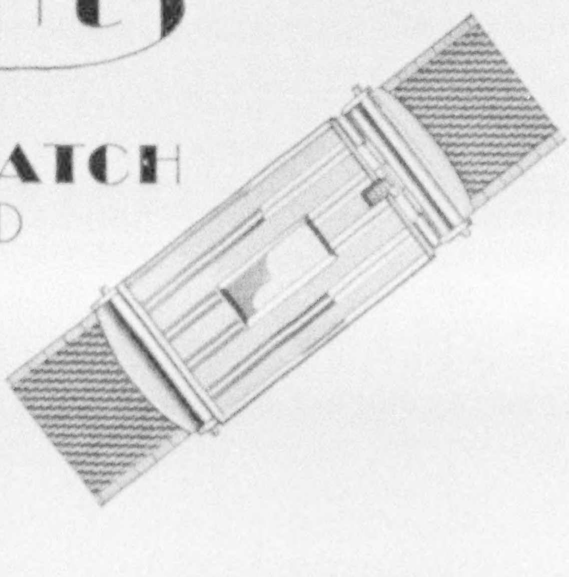
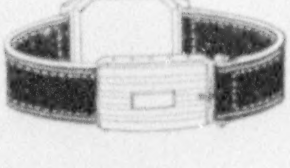




When completely expanded there is ample allowance for free passage over hand or up on forearm.



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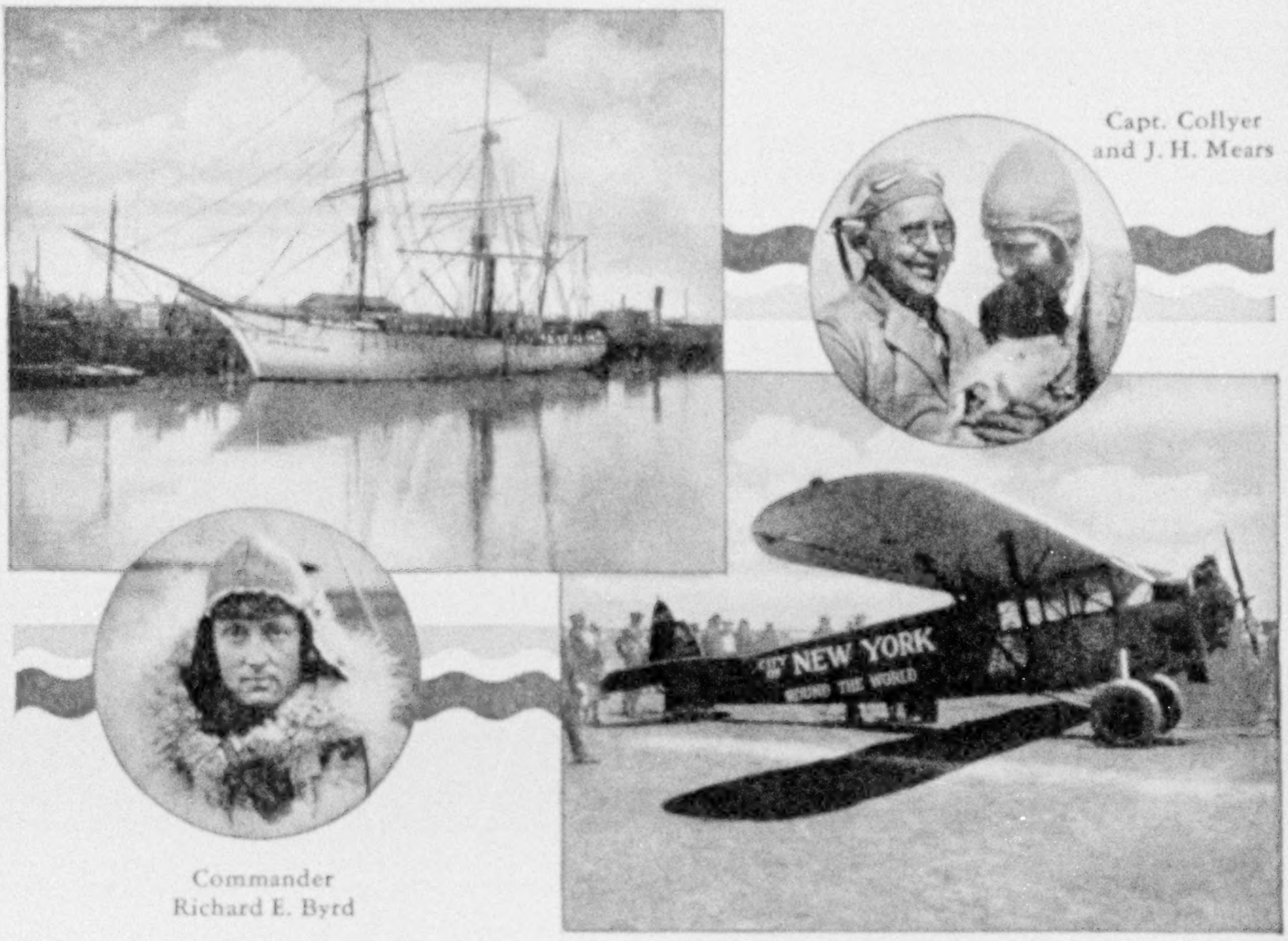

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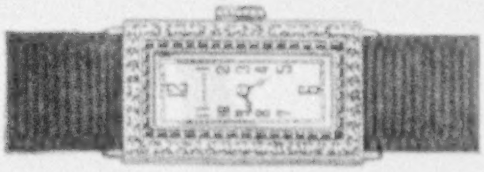

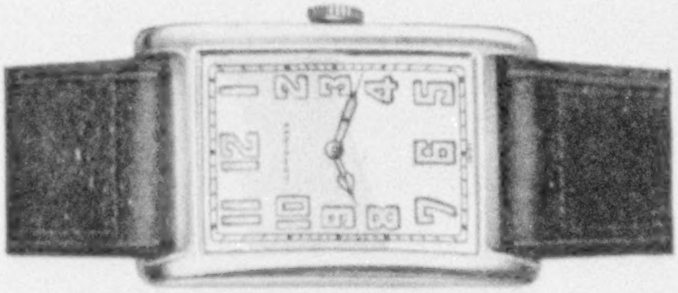

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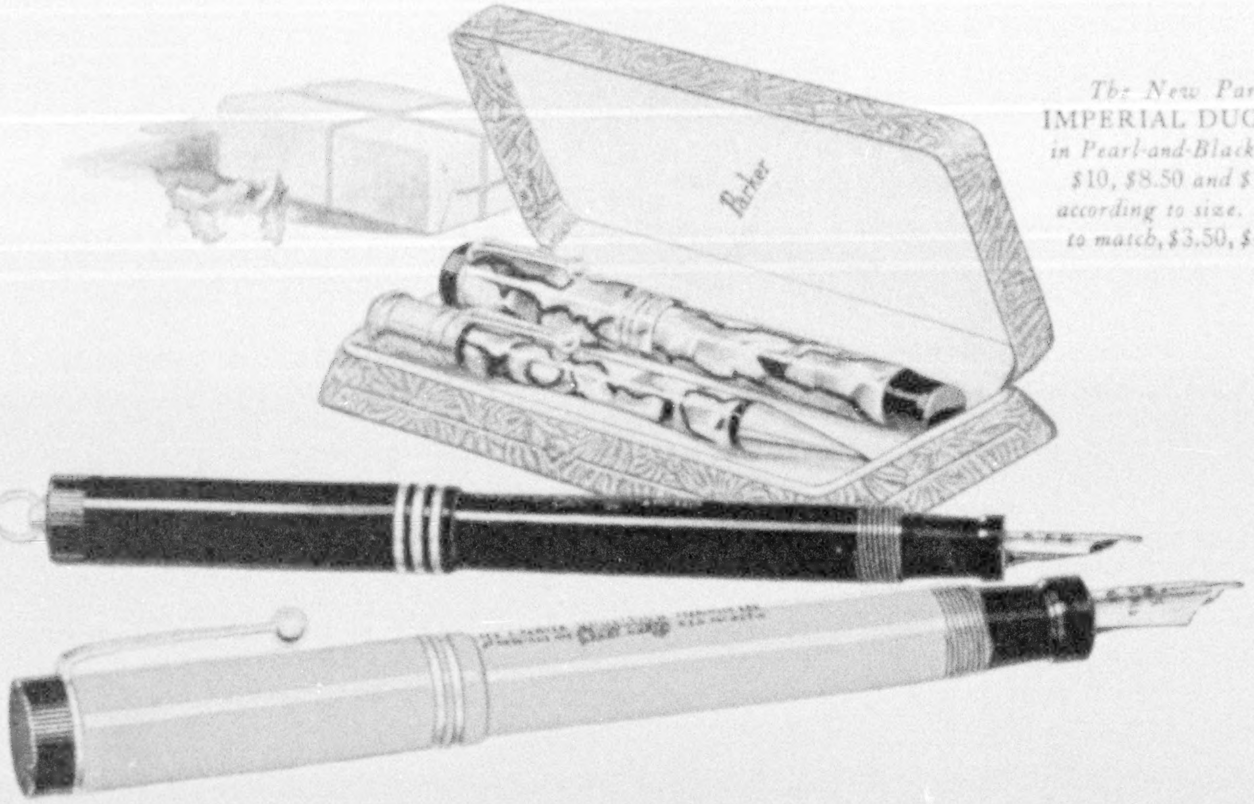

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